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Walden University

College of Social and Behavioral Sciences

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Loretta J. Morris Barr

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the review committee have been made.

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Walden University
2019

Abstract

Person Factors Affecting Student Persistence
in College Reading and Writing Remediation

by

Loretta J. Morris Barr

MA, University of Akron, 2006

BA, Ashland University, 2000

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Psychology

Walden University

May 2019

Abstract

The United States has the highest college attrition rate among industrialized nations. Community college students face a much higher risk, particularly those who lack requisite reading/writing skills. Using the theory of planned behavior and self-determination theory, this study explored the relationship between persistence in college for students in traditional or corequisite remediation. Person factors under study were frustration discomfort, academic motivation, and self-reported symptoms of adult attention-deficit hyperactivity disorder (ADHD). After 7 semesters, 72 adult student volunteers from the 2 remediation programs were recruited from 2 community colleges. They completed an online survey, which included a demographics questionnaire, the Frustration Discomfort Scale, the Academic Motivation Scale, and the Adult ADHD Self-Report Scale Symptom Checklist (ASRS-V1.1). Based on the results of Chi square, *t*-test, and MANOVA analyses (as appropriate per research question), type of remediation indicated a slight, albeit statistically nonsignificant effect on persistence. Persisters and nonpersisters did not differ on frustration discomfort nor academic motivation. However, persisters demonstrated significantly lower levels of adult self-reported ADHD symptoms than those who did not persist. The positive social change implications of this study include using the findings to promote early testing and diagnosis of ADHD, active monitoring of students in remediation, and proactive (i.e., intrusive) advising for students with this disability, in order to facilitate the best outcomes for their academic pursuits.

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Dedication

This dissertation is dedicated to my amazing husband, Michael, for his love, friendship, and absolute joy he brings to my life; to our children, Kara, Brady, Trent, and Matthew, for their love, inspiration, encouragement, and friendship; and to my parents, Arthur and Rilla Morris, who instilled in us a love of learning, the courage to question, and the determination to pursue our dreams.

And to our beautiful grandchildren, in whose arms lie all our fondest hopes and dreams for the future.

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Chapter 1: Introduction to the Study

Introduction

While the benefits of college education are many, the United States has the highest college attrition rate among industrialized nations, creating cause for concern for not only the individuals involved, but for society as a whole (Symonds, Schwartz, & Ferguson, 2011, p. 18). For students in community colleges, the risk of attrition is much higher, particularly among those who lack requisite skills for reading and writing at the expected college level (Pruett & Absher, 2015). Students who test into developmental/remedial education courses typically demonstrate significantly higher attrition rates (Complete College America, 2012). Due to their inherent nature (i.e., guaranteed acceptance, certification and retraining programs, etc.), community colleges tend to attract much higher numbers of students with skills deficits who are subsequently enrolled in developmental/remedial education (i.e., courses intended to help students reach college-level skills). National data from the 2013 Community College Survey of Student Engagement (CCSSE) determined that 60% of the 400,000 students included in the survey were classified as remedial/developmental students (Pruett & Absher, 2015, p. 34). Students enrolled in remedial reading and writing classes were 23.3% and 15.1% less likely, respectively, to continue in college (Pruett & Absher, 2015, p. 37). While a number of factors can influence student persistence, it is crucial to discover why students in remedial reading and writing courses in particular are demonstrating such poor rates of persistence and success in their attempts at college-level work. For the United States to remain competitive in the world, it is critically important to examine and understand

these rates of attrition to ensure that students have the best opportunity for success with their educational goals.

In this research, I explored potential factors influencing college student persistence and success or attrition in developmental/remedial and corequisite reading and writing courses in community colleges. The positive impact of college in the life of individuals, and thereby, society as a whole, has been highly documented (Pascarella & Terenzini, 2005). However, according to Bahr (2012), researchers have yet to determine why students fail to develop the appropriate skills, particularly those most at risk – students at the lower end of the skills spectrum – who tend to languish in remedial courses and achieve the lowest rates of success (p. 661). While researchers have proposed many reasons for the state of college attrition rates (Bean & Eaton, 2000; Roberts, 2012; Tinto, 1993), they fail to completely ascertain the factors that influence attrition, particularly among remedial reading and writing students who have the highest rates of attrition (Bahr, 2012; Pruett & Absher, 2015). With this analysis, I sought to discover (a) if frustration discomfort and intolerance affects college student persistence in remedial reading and writing courses in the community college setting, (b) if motivation toward such courses impacts student persistence in college, and (c) if learning disabilities such as attention-deficit hyperactivity disorder (ADHD) could potentially affect attrition/persistence decisions. Understanding factors that can affect persistence among students with reading/writing deficits may inform ways to create more effective interventions and outcomes for these students.

In this study, I considered of three key variables that may affect persistence/attrition among community college students in remedial reading and writing courses: diagnosed or undiagnosed adult ADHD, frustration discomfort and intolerance, and types of motivation toward college in general. The results of this study are significant in that while many different classroom contexts and possible outcomes have been extensively studied, as well as various causes of college attrition (Pruett & Absher, 2015), these factors that have not yet been addressed. Through better understanding of the possible role of these factors, college faculty, advisors, counselors, administrators, and other stakeholders may investigate avenues to address such frustration and attitudes to prevent and/or intervene in attrition from college.

In this chapter, I provide background information and purpose for the analysis, and describe and outline the study. Further, basic definitions, concepts, theoretical framework, and variables are provided. The section concludes with discussions of the scope and limitations of the analysis, and a transition to Chapter 2.

Background of the Study

The benefits of college education have long been established, including higher income over the course of an individual's career, higher occupational status related to the degree or certification, and conferral of benefits on future generations of those who complete college, all of which have obvious further implications for society in general (Pascarella & Terenzini, 2005). In addition to career skills, students gain verbal, quantitative, as well as cognitive and intellectual skills, including critical thinking and decision-making skills, with long-term effects of college demonstrating 20%–40%

socioeconomic gains over the course of the lifetime (Pascarella & Terenzini, 2005). Yet, despite expectations of achieving a college education in the United States, only 4% of students in the United States complete associate degrees within the expected timeframe at 2-year/community colleges (Complete College America, 2015b). Once the duration extends beyond the standard timeframe, attrition increases drastically, with over 70% of community college students failing to complete their programs in 3 years (U.S. Department of Education, 2015). Many of these students are among the 60–75% of students who test into remedial (i.e., non-credit) courses (Hodara, 2015, Pruett & Absher, 2015). Once students enter remedial/developmental reading and/or writing courses, completion rates drop 23.3% and 15%, respectively, which has prompted many to question the perception of languishing in these courses (Pruett & Absher, 2015).

Furthermore, studies have long connected the potential for reading and writing difficulties among those with ADHD (Willcutt & Pennington, 2000). Bilkey, Surman, and Weintraub (2014) reported that only 1 in 10 individuals who are suffering with ADHD are actually diagnosed, while less than half of those diagnosed receive no accommodations for the disability (Oguntoyinbo, 2012). Those with ADHD typically suffer from lack of emotional self-regulation, including frustration intolerance (Burns & Martin, 2014). While frustration discomfort and intolerance have been investigated related to grade point average (GPA; Wilde, 2012)], these factors have not been addressed as potential mediators in college attrition among those in remedial/developmental education and corequisite remedial reading and writing courses at community colleges in the United States. The purpose of this study was to investigate

this potential connection through the administration of self-report surveys to remedial reading and writing and corequisite remediation students at community colleges in an attempt to determine if undiagnosed ADHD, frustration intolerance, and type of motivation play a role in persistence or attrition. This connection could provide accommodations to students who may otherwise walk away from the benefits of a college education, in part due to a disability that is protected under the Individuals with Disabilities Education Improvement Act (IDEA; 2006).

Problem Statement

As previously stated, the benefits of a college education are numerous; however, the college attrition rate in the United States is the highest among industrialized nations (Symonds, et al., 2011, p. 18). The implications of this phenomenon are obvious, creating social and economic repercussions for all concerned. While multiple factors have been examined, no researcher has yet investigated frustration discomfort and intolerance, motivation, and potential ADHD as mediating factors for success in and completion of college programs among individuals in developmental/remedial reading and writing courses as well as those in corequisite remediation.

In a comprehensive analysis from the CCSSE, Pruett and Absher (2015) reported that approximately 60% of community college students are classified as college-level skills deficient (i.e., developmental/remedial), requiring enrollment in one or more classes intended to increase requisite skills. Hodara (2015) found much higher levels of remediation at 75%. Additionally, Hern (2012) demonstrated that of 57 community colleges surveyed, more than 90% of students who demonstrated below-college skill

levels were eliminated while still in remediation, after developing a sense of hopelessness about their academic abilities while noticeably languishing in remedial courses.

McMahon (2015) suggested focusing on remedial/developmental courses to increase persistence and success, while Bahr (2012) opined that reducing or eliminating the time spent in remediation was “a structural barrier to college-level skills attainment” (p. 663). These findings from the literature clearly demonstrate the need for further investigation as to why courses that are intended to increase college skills and success potential are actually a barrier that increases attrition. Corequisite courses (i.e., college level courses with tutoring or required labs included) have been introduced as an attempt to alleviate this barrier (Adams, 2017). I included for comparative purposes in this study.

The first person aspect examined in this analysis was that of potential frustration discomfort and intolerance among students in remedial/development courses. Frustration discomfort has been widely demonstrated to impact achievement and goals attainment, including academic functions and pursuits. Wilde (2012) found that frustration intolerance and needs frustration (both of which are aspects of frustration discomfort) contributed significantly to in mediating GPA, demonstrating that GPA drops as frustration discomfort factors increase. Sierpinska, Bobos, and Knipping (2007) indicated that over 40% of students in remedial math sequences are negatively impacted by frustration in their learning experiences. In online courses, Capdeferro and Romero (2012) analyzed learning and the collaborative process, where 60% of their participants indicated frustration negatively affected their perception of the experience. These results

provided further impetus for studying this factor in persistence among community college student in remedial reading and writing courses.

Also central to persistence and development is the type of motivation that prompts individuals to set and pursue goals, as in the pursuit of college programs (Deci & Ryan, 2008). With this in mind, I also examined academic motivation to determine if the predominant type of motivation, (i.e., intrinsic/extrinsic/amotivation) plays any role in persistence or attrition from college during remedial reading or writing courses.

According to Maurer, Allen, Gatch, Shankar, and Sturges (2013), motivation is part of a continuum, with intrinsic motivational factors being the most inherently motivating, extrinsic factors more central, and the absence or lack of motivation – amotivation – as the opposing end of the continuum. Lee, Pate, and Cozart (2015) described college student motivation as a critical factor related to persistence/attrition decisions. Further, Martin, Galentino, and Townsend (2014) state that student motivation is a clear indicator of success among community college students (measured in terms of persistence).

Including this factor in this study allowed me to examine another important factor for student persistence in remedial/developmental or corequisite reading and writing courses.

The final factor I examined for this study which could provide further insight into remedial/developmental success or attrition was that of ADHD. This disorder is characterized by inattention, poor impulse control, difficulty in concentrating, and high levels of distractibility over a period of time (Zimbardo, Johnson, & McCann, 2014). Nearly 25% of students with disabilities did not return after their first year in college, while nearly 51% did not return after their second year, with ADHD comprising 17.3% of

disability diagnoses (Mamiseishvili & Koch, 2011). An estimated 50% or fewer of students with diagnosed learning disabilities actually report the disability and/or utilize any available resources, while many students with ADHD diagnoses do not receive (or take advantage of) accommodations and support provided by colleges, despite learning disabilities nearly doubling from 2001-2009 (Oguntoyinbo, 2012; U.S. Government Accountability Office, 2009). According to Alao (2015), few studies have analyzed adult ADHD and its implications among college students, leading to questions as to how this potentially relates to attrition. Characteristics of ADHD include lack of impulse control and emotional regulation, generally influencing the individual's ability to adapt to changing situations and challenges, which is potentially associated with frustration as well as motivation in college completion (Burns & Martin, 2014; Kearns & Ruebel, 2011). Further, Stamp, Banerjee, and Brown (2014) reported that 75% of students with diagnosed ADHD had difficulties meeting the demands of college, feeling inadequate in accomplishing their work and unable to ask for help, providing additional potential mediating factors in college success and completion in remedial/developmental courses.

Gap in the Literature

College retention is a serious concern among those lacking requisite reading and writing skills. While studies have addressed frustration discomfort, motivation, and ADHD as factors related to college success, no researchers have examined these as mediating variables in the completion of remedial/developmental reading and writing courses nor have these been addressed in relation to corequisite college-level composition courses among students with reading/writing deficits. It is critical that there is an

understanding of these factors, to better ensure student success in college and offer an improved future for these individuals, their families, and society as a whole.

Purpose of the Study

As stated, according to Pruett and Absher (2015) and Complete College America (2012), student persistence in remediation is a significant problem in the United States. In this quantitative study, I investigated the type of remediation, frustration discomfort, motivation, and ADHD as factors that are potentially related to outcomes (i.e., persistence/attrition) in remedial/developmental reading and writing courses in community colleges. I utilized self-report survey methodology and a cross-sectional strategy to assess frustration discomfort, motivation, and ADHD as mediating variables for the prediction of academic persistence or attrition among students attending one of two types of remediation for college reading/writing skills deficiencies.

Research Questions and Hypotheses

The final research questions and hypotheses (modified due to changes in statistical analyses related to smaller sample sizes; see Chapter 4) addressed by this study were:

Research Question 1: Does type of intervention for reading/writing skill deficits predict the likelihood of persistence and/or retention among college students receiving the intervention?

H_{01} : Type of intervention for reading/writing skill deficits does not predict the likelihood of persistence and/or retention among college students receiving the intervention.

H₁₁: Type of intervention for reading/writing skill deficits significantly predicts the likelihood of persistence and/or retention among college students receiving the intervention.

Research Question 2: Do persisters and nonpersisters among college students receiving an intervention for reading/writing skill deficits differ in frustration discomfort, as measured by the Frustration Discomfort Scale (Harrington, 2005)?

H₀₂: Persisters and nonpersisters among college students receiving an intervention for reading/writing skill deficits do not differ in frustration discomfort, as measured by the Frustration Discomfort Scale (Harrington, 2005).

H₁₂: Persisters and nonpersisters among college students receiving an intervention for reading/writing skill deficits differ significantly in frustration discomfort, as measured by the Frustration Discomfort Scale (Harrington, 2005).

Research Question 3: Do persisters and nonpersisters among college students receiving an intervention for reading/writing skills deficits differ in motivation, as measured by the Academic Motivation Scale (Vallerand et al., 1992)?

H₀₃: Persisters and nonpersisters among college students receiving an intervention for reading/writing skills deficits do not differ in motivation, as measured by the Academic Motivation Scale (Vallerand et al., 1992).

H₁₃: Persisters and nonpersisters among college students receiving an intervention for reading/writing skills deficits differ significantly in motivation, as measured by the Academic Motivation Scale (Vallerand et al., 1992).

Research Question 4: Do persisters and nonpersisters among college students receiving an intervention for reading/writing skill deficits differ in adult self-reported ADHD as measured by the Adult ADHD Self-Report Scale Symptom Checklist (Kessler et al., 2005)?

H₀₄: Persisters and nonpersisters among college students receiving an intervention for reading/writing skill deficits do not differ in self-reported adult ADHD as measured by the Adult ADHD Self-Report Scale Symptom Checklist (Kessler et al., 2005).

H₁₄: Persisters and nonpersisters among college students receiving an intervention for reading/writing skill deficits differ significantly in self-reported adult ADHD as measured by the Adult ADHD Self-Report Scale Symptom Checklist (Kessler et al., 2005).

Research Question 5: Do persisters and nonpersisters in the two remediation programs differ on person variables?

H₀₅: Persisters and nonpersisters in the two remediation programs do not differ on person variables.

H₁₅: Persisters and nonpersisters in the two remediation programs differ significantly on person variables.

Theoretical and Conceptual Framework for the Study

Theoretical Foundation

Ajzen's (1991) theory of planned behavior, built on the foundation of Fishbein and Ajzen's (1975) theory of reasoned action, relates attitudes with behavior to predict individual behavior. In college, individuals may have varying expectations of outcomes that will affect their motivation of effort toward goals and potential outcomes, such as course or program completion (Wheless, Witt, Maresh, Bryand, & Schrodt, 2011). Self-determination theory further grounded this study by being used to address internal motivation within individuals that focuses them toward goals and achievements in their lives, as in furthering education, providing a better future for themselves, etc. (Deci & Ryan, 2000). These theories provided me with a logical foundation in this study by addressing factors that initiate and prompt continuation of behaviors toward goals, such as college education, and providing me with an opportunity to understand factors that might impede progress toward such goals, as with college persistence or attrition decisions. These theories will be described in greater detail in Chapter 2.

Conceptual Framework

Despite many obvious benefits, the United States has the highest college attrition rate among developed nations of the world, particularly in community colleges (Symonds et al., 2011). In an attempt to understand the college attrition phenomenon, Tinto (1975) developed a sociological model of departure from college, which continues to be used widely among researchers (Bergman, Gross, Berry, & Shuck, 2014; Shepler & Woosley, 2012). Adding psychological factors, Bean and Eaton (2000) offered a psychological

model of attrition in an attempt to more fully address psychological factors that students face when determining whether to persist or to leave; their model has been used in research such as Johnson, Wasserman, Yildirim, and Yonai (2014). In order to give a full picture of the factors that affect student attrition from college, Roberts (2012) integrated both Tinto's sociological model with Bean and Eaton's psychological models to develop a comprehensive model of college student attrition, that addressed factors that influence persistence/attrition decisions in college. This framework provided me with an appropriate basis for this study because I developed this study and its research questions directly investigate the complex factors related to student success in college remedial/developmental courses. This framework will be described in detail in Chapter 2.

Nature of the Study

In this study, I used a one-time, self-reported online survey of community college students who tested into remediation in reading and writing. Students were recruited early in the semester via e-mail as well as in course classrooms. Survey methodology was both appropriate and consistent with other studies that investigated the same or similar factors in education as well as among college students. Similar studies using survey methodology include Wilde's (2012) analysis of frustration discomfort and GPA using Harrington's (2005) Frustration Discomfort Scale; Koludrović and Ercegovac's (2015) study of academic motivation among education majors, using Vallerand et al.'s (1992) Academic Motivation Scale; as well as Kessler et al.'s (2005) Adult ADHD Self-Report Scale Symptom Checklist, which has been used by the World Health Organization and other healthcare professionals. For my study, I anticipated using binary logistic

regression, consistent with mediating variables in predictive analyses, as with Bahr (2012); Bremer et al. (2013); DeNicco, Harrington, and Fogg (2015); Pruett and Absher (2015); etc. However, due to small sample size, this plan was altered with the permission of my dissertation committee. Analysis was conducted through SPSS, in accordance with the standard of data analysis in the social sciences.

Definitions

In this study, key terms include:

Academic motivation: Students' motivation for coursework and to achieve overall educational goals, affecting the quantity and quality of effort expended toward the goal (Koludrović & Ercegovac, 2015).

Attention-deficit/hyperactivity disorder (ADHD): A psychoneurological behavioral disorder that is characterized by inattention, poor impulse control, difficulty in concentrating, and high levels of distractibility over a period of time (American Psychiatric Association, 2013). ADHD is notably problematic for individuals in completing educational goals, whether in elementary, secondary, or postsecondary (i.e., college) education (Boyd & Bee, 2012; Zimbardo et al., 2014).

Attrition: The active or passive decision individuals makes to leave, withdraw, or fail in some way to complete their educational goals (Pruett & Absher, 2015, p. 32). Attrition is a critical concern not only due to the fact that college offers so many benefits for individuals and society as a whole, but also because the United States has the highest college attrition rate among developed countries (Pascarella & Terenzini, 2005; Symonds et al., 2011).

Frustration: An emotional response to opposition, as with a perceived obstacle to or inability to achieve a goal (Harrington, 2005).

Frustration discomfort: The degree of distress or intolerance for opposition or perceived obstacles (Harrington, 2005).

Learning disabilities: A group of disorders that are potentially complicating factors in educational goal attainment and demonstrated by difficulties in speaking, listening, reasoning, reading, writing, or mathematical capabilities and the organization of information, creating difficulties in the learning process if taught using conventional methods (Boyd & Bee, 2012; Gormley et al., 2015; Hammill, Leigh, McNutt, & Larsen, 1989; Santrock, 2011).

Persistence: The determination to remain with a course of action despite complications or impediments to goal achievement, which in the case of this study, involved completion of remedial/developmental courses toward conclusion of an individual's educational goals, such as college program or degree (Pruett & Absher, 2015). In higher education, students who continue in their programs and receive certification or degrees will not only increase their opportunities for success personally and professionally, but ultimately for their families and society as a whole (Tinto, 2004). Relatedly, this success increases retention levels for their respective educational institutions, a critical factor for the higher education industry (Pruett & Absher, 2015; Tinto, 2004).

Reading/writing skills deficits: Lacking requisite skills deemed necessary to successfully complete college courses as determined by standard college entrance testing or prior educational achievement (Bahr, 2012; Pruett & Absher, 2015).

Remediation: Any course-based strategy designed to assist students in acquiring requisite college-level skills, focused in this research on reading and writing (Complete College America, 2012; Pruett & Absher, 2015).

Assumptions

Inherent in any study are associated assumptions. For this study, I assumed that participants would provide truthful, accurate data that would inform the research questions and provide insight into attrition so that identified factors could be addressed. No socially sensitive questions were asked; however, I did ask questions about person factors related to frustration discomfort and ADHD that could have made some low self-disclosure participants uncomfortable and aware of the perceived stigma attached to ADHD. To help avoid this, participants were given minimal information, without deception, to begin the survey and were fully debriefed following the survey. As any study can face similar potential factors, these were considered minimal and normal in the implementation of self-report survey instrumentation.

Scope and Delimitations

Scope and delimitations are the boundaries for the study, set to provide reasonable structure and controls over the extent and objectives of the study (Simon & Goes, 2013). It is well established that college attrition is a serious concern for the United States (Complete College America, 2015; Pruett & Absher, 2015; Symonds et al., 2011). I

formulated this study to analyze the person factors of frustration discomfort, motivation, and potential ADHD among community college students who tested below requisite skills and were placed into reading, writing, and corequisite English courses for skills development. Attrition from these courses is significant and problematic for not only the students, but for colleges and society as a whole, so it was logical to attempt to address these factors (Complete College America, 2015; Pascarella & Terenzini, 2005). Student frustration in courses has been expressed in a variety of settings and demonstrated to affect success and completion, yet not in remediation (Wilde, 2012). Motivation has long been known to determine the degree of effort expended toward goal attainment, which justifies its inclusion in this study (see Deci & Ryan, 2000; Koludrović & Ercegovac, 2015). Additionally, ADHD is recognized to generate further difficulties in the learning process, including increased frustration, inattention, and reduced motivation toward goals; yet no studies have addressed this as a confounding factor affecting remedial course completion (Zimbardo et al., 2014).

I included adults only in the study due to analysis of adult ADHD among participants, as well as ethical concerns regarding research including children. Additionally, since the majority of skills-deficit students enroll in 2-year community colleges for skills remediation, this was the appropriate place to conduct the study (Complete College America, 2014; Pruett & Absher, 2015). Two, small, Midwestern community colleges participated in the study. All students in remediation in reading and writing comprised the participant pool, whether in traditional or corequisite courses.

Generalizability of results is contingent upon several factors. First, both participant colleges were located in small Midwestern communities that serve relatively rural populations. The population of Community A was slightly under 50,000, and comprised of 87.6% non-Hispanic White, 9.5% Black, 1.7% Hispanic, and less than 1% each of other races; the median household income was \$42,042, with 15.9% of the population in poverty (U.S. Census Bureau, 2015a). Community B was comprised of slightly less than 70,000 individuals, of which 91% were non-Hispanic White, 6.4% Black, 2.4% Hispanic, and other races comprised less than 1% each; median income was listed at \$42,904, with a poverty rate of 21.3% (U.S. Census Bureau, 2015b). Comparatively, the United States average is 77.4% Non-Hispanic White, 13.2% Black, 17.4% Hispanic, 5% Asian, 1.2% American Indian/Alaskan Native, with other races less than 1% each; median income is \$53,482 (U.S. Census Bureau, 2016). While similar in demographic information, these colleges provided data that may not be generalizable to the United States as a whole; however, they provided significant information for these colleges as well as a basis for further study.

Limitations

The limitations of the study include comparative demographic differences between the Midwest and the United States in general, as I previously discussed. Additionally, the small/limited sample sizes used in this study may not express the true diversity of the colleges, another factor in generalizability. Furthermore, while I attempted to include all students in reading/writing remediation, whether traditional remedial courses or in corequisite courses, I employed convenience sampling, which may

not be generalizable to the population as a whole. Ultimately, the final group of participants was quite small ($N = 72$), which implies further research for replication of results. However, the results of this study still provided useable data for participating colleges and can serve as a basis study for replication with larger, more diverse populations. Moreover, since participants were tracked for persistence, those who failed to persist in courses may have done so for a variety of complex factors related to attrition, such as economic factors, family or job considerations, etc., all of which may be unknowable or unmeasurable. Nonetheless, the factors examined could provide valuable information as to the nature of the attrition. For example, many students persist through difficult and trying circumstances, but others may leave for comparatively minor reasons; all of these circumstances may well be related to the factors being examined, still providing valuable data for consideration.

Significance

Potential contributions of this study include a wide array of benefits. First, the results of this study will assist in addressing factors related to college persistence and completion. As I previously discussed, college attrition in the United States is an epidemic, with many studies conducted on the issues, yet few answers to the problem. With information from this study, colleges can improve course instruction to address student person factors of frustration and motivation, helping streamline course processes and eliminating factors that can raise frustration levels and reduce motivation. The data from this study can also be used to mentor students in understanding and better addressing these factors in themselves, potentially raising persistence rates. Furthermore,

because ADHD be identified as a factor in attrition, individuals and institutions can be better prepared to diagnose and accommodate this disability as guaranteed by the United States Individuals with Disabilities Education Act of 2004 (U.S. Department of Education, 2004).

The findings of this study will also help address additional factors related to remedial education attrition. This will help better provide for the benefits of a college education for individuals and their families, including self-esteem and satisfaction as well as socioeconomic benefits over the course of the lifetime. These benefits extend to society as a whole, with higher incomes and better standards of living for all concerned.

The factors addressed in this study provide obvious implications for social change, first by offering better opportunities for success among individuals with disabilities through better diagnosis and accommodations for such disabilities. Using the results of this study, individuals with ADHD can be appropriately supported so that they can complete their educational goals, while educators can remove the barriers that impede their progress. Removing such barriers and improving success rates among these students can change not only the course of their lives, but that of their families, their communities, and the nation as a whole. College completion is in crisis in the United States, and there is a critical moral and ethical imperative to confront this crisis, which I address with the current study.

Summary

In this chapter, I provided background information and the purpose for the study, as well as described and outlined the study. Basic definitions, concepts, theoretical

framework, and variables were provided. The section concluded with discussions of the scope and limitations of the analysis and implications for social change. Chapter 2 follows, in which I will provide an extensive review of literature that provides the theoretical foundation and conceptual framework for this study, and extensive discussion of terms and concepts that were part of the analysis.

Chapter 2: Literature Review

Introduction

The United States has the highest college attrition rate among industrialized nations (Symonds et al., 2011, p. 18). For students in community colleges, the risk or attrition is much higher (Pruett & Absher, 2015). Students who test into developmental/remedial education courses typically demonstrate low completion rates (Complete College America, 2012). Community colleges tend to have much higher rates of students with skills deficits who are enrolled in developmental/remedial education (courses intended to help students reach college-level skills). National data from the 2013 CCSSE determined that 60% of the 400,000 students included in the survey were classified as remedial or developmental students (Pruett & Absher, 2015, p. 34). Students enrolled in remedial reading and writing classes were 23.3% and 15.1% less likely, respectively, to continue in college (p. 37). While a number of factors can influence student persistence, and for the United States to remain competitive in the world, it is crucial to continue to examine college attrition rates and discover why students in remedial reading and writing courses in particular are demonstrating such poor rates of persistence in their attempts at college-level work. This will help ensure that students have the best opportunity for success with their educational goals.

In this study, I explored potential factors influencing college student persistence and success or attrition in developmental/remedial reading and writing courses in community college in order to provide better opportunities for skill development and

ultimately, success in students' college-related goals. The positive impact of college in the life of individuals, and thereby, society as a whole, is highly documented (Pascarella & Terenzini, 2005). However, according to Bahr (2012), researchers have yet to determine why students fail to develop the appropriate skills, particularly students at the lower end of the skills spectrum, those who are most at risk and tend to languish in remedial courses and achieve the lowest rates of success (p. 661). While researchers have proposed many reasons for college attrition (Bean & Eaton, 2000; Roberts, 2012; Tinto, 1993), they fail to ascertain the person factors that influence attrition, particularly among remedial reading and writing students who have the highest rates of attrition (Bahr, 2012; Pruett & Absher, 2015). In this study, I sought to discover (a) if frustration discomfort and intolerance affects college student attitudes toward remedial reading and writing courses in the community college setting, (b) if attitude orientation toward such courses impacts student motivation to persist in college, and (c) if diagnosed learning disabilities such as ADHD (American Psychological Association, 2013) could potentially mitigate attrition/persistence decisions. Traditional remediation has been demonstrated to decrease persistence and corequisite remediation has increased persistence (Adams, 2017). This factor was included as part of this study to determine if this was a significant factor in persistence for these participants, or if other factors affected persistence.

In this study, I considered three key variables that could moderate attrition/persistence among community college students in remedial reading and writing courses. First, diagnosed and undiagnosed learning disabilities (i.e., ADHD), as I previously discussed, can impose significant barriers to success in college. Additionally, frustration

discomfort and intolerance can hinder progress through the perception of roadblocks in the path toward college completion. Finally, academic motivation can determine attitude orientation toward remedial courses among students. Once determined, these factors can be addressed, and in particular, if undiagnosed or unaccommodated learning disabilities are implicated for students, further assistance can be offered, based in United States law (Individuals with Disabilities Education Improvement Act, 2006).

Many different classroom contexts and possible outcomes have been extensively studied, as well as various causes of college attrition (Pruett & Absher, 2015). This study is significant in that the factors of frustration discomfort and intolerance and academic motivation toward developmental/remedial reading and writing courses as potential contributors to higher attrition among students involved in these courses over their math counterparts have not yet been addressed. Through better understanding of the possible role of these factors, college faculty, advisors, counselors, and other stakeholders may be able to develop avenues to address these issues in order to intervene and potentially prevent attrition from college. In this chapter, I will present the strategies used and scope of this review of the literature, the theoretical foundation and conceptual framework for the study, and a chapter summary, with a transition to Chapter 3.

Literature Search Strategy

As is customary, I undertook a comprehensive review of literature on the topic preceding research for this study. Databases accessed included Academic Search Complete, Communication & Mass Media Complete, Education Research Complete, ERIC, Primary Search, PsycARTICLES, PsycBOOKS, PsycEXTRA, PsycINFO,

Psychology and Behavioral Sciences Collection, SocINDEX with Full Text, Sociological Collection, Teacher Reference Center, PsycTESTS, and ProQuest Central. Resources were accessed through search engines, databases, and literature repositories including the American Psychological Association, Google Scholar, The Ohio State University system, OhioLINK, and Walden University.

Search Terminology

The search terminology, in various combinations and configurations consistent with the scope of this investigation, included *developmental education, remedial education, persistence, attrition, course withdrawal, college departure, emotion, self-regulation, frustration, academic motivation, and attention-deficit hyperactivity disorder (ADHD)*. Additional search terminology that I used related to *college, community college/s, college students, classes, courses, remedial education courses/classes, and developmental education courses/classes*, also in various combinations and configurations. These concepts and terms were consistent with the literature and practice in the field of higher education and provided a comprehensive analysis of the topic.

Scope of Literature Reviewed

The literature I reviewed for this analysis includes seminal work on planned behavior (Ajzen, 1980) and self-determination (Deci & Ryan, 2000; Ryan & Deci, 2000), as well as landmark analyses on college student attrition, beginning with Tinto's (1975) sociological factors implicated in student departure from college education. Years searched include seminal works beginning in 1975 through the present, focusing primarily on material published in the past 5 years and important studies that provide

insight and frame this study. The literature reviewed emphasizes college attrition and persistence, primarily in remedial/developmental education, frustration, motivation, and their implications for the college education process. Further findings included information on attitudes and motivation as related to developmental/ remedial courses and their effects on persistence or attrition. Additional work encompassed current research on learning disabilities and their effects on the learning process. All literature reviewed was from peer-reviewed journals and studies, as well as professional and edited works. While there is a great deal of extant literature related to persistence and attrition in college as well as the problem of attrition related to developmental/remedial/corequisite courses, I found no research that investigated frustration discomfort, academic motivation, or ADHD as factors for attrition in developmental/remedial/corequisite courses, which were the bases for my study.

Theoretical Foundation

Ajzen's (1980) theory of planned behavior was the theoretical foundation for this study. This theory was built on the foundation of Fishbein and Ajzen's (1975) theory of reasoned action, and describes the relationship between attitudes and behavior to predict individual behavior based in existing attitudes and intentions (Ajzen, 1980). According to the theory, an individual's decision to engage or continue in any particular behavior is based on the expected outcome of the behavior (Ajzen, 1980). In the case of college education, individuals may have varying expectations of outcomes, from low or ambiguous to high expectations of educational, career, or personal success. Coupled with various attitudes, ranging from fear and anxiety to confidence, these factors combine to

explain motivation and degree of effort expended toward potential outcomes. For college students, this applies in relation to their motivation to register for college and the various courses required as well as their expectations for their futures, from degree or program certification to career and personal success in life. This theory has been used to describe intent and motivation in a variety of situations such as business-related decisions, health behaviors, consumption behaviors, buying behaviors, etc., and notably, has been used to describe and predict persistence/attrition behaviors among college students, as in Wheelless et al.'s 2011 study. In their study, the researchers noted connections between various instructor characteristics and student persistence, providing evidence that this theory provides a solid foundation for understanding factors that influence students' choice of goals as well as those factors that could impede their progress and their continuing motivation toward intended outcomes.

Self-determination theory further grounded this study by being used to address individuals' innate tendencies toward growth and fulfillment and the psychological needs that explain various motivation and personality factors (see Deci & Ryan, 2000; Ryan & Deci, 2000). Self-determination theory suggests that motivation ranges from controlled regulation (i.e., necessity of action for specific purposes, as in extrinsic motivation) to autonomous motivation (i.e., action based in the reward of the action itself, as with intrinsic motivation; Deci & Ryan, 2000; Ryan & Deci, 2000). This theory explains inherent motivations within individuals that focus on that which drive them toward goals and achievements in their lives, purely from an internal perspective, sans external influences and interference (Deci & Ryan, 2000; Ryan & Deci, 2000). For example, Lee,

Pate, and Cozart (2015) described student motivation related to persistence/attrition decisions based in this theory, further grounding the current study of potentially mitigating factors that could impede individual progress toward achievement of college and career goals. Also consistent with my use of this theory in this study was Simon, Aulls, Dedic, Hubbard, and Hall (2015), who grounded their analysis of student persistence in science, technology, engineering, and math programs in self-determination theory, describing various factors that influence students' motivation to continue in their programs, and demonstrating that this theory is appropriate and consistent with research concerned with student persistence and decisions to persist or depart from college or educational programs.

Inextricably tied to self-determination theory is the factor of motivation in determining degree of success (or lack thereof) in college. Motivation research focuses "... on the conditions and processes that facilitate persistence, performance, healthy development, and vitality in our human endeavors (Deci & Ryan, 2008, p. 14). As stated by Maurer et al., (2013), motivation is represented along a continuum, with intrinsic motivational factors being the most motivating and self-determined, extrinsic factors falling near the center; and amotivation, the absence of intention and motivation, falling opposite of intrinsic motivation (p. 77-78). Since motivation is vital for college success, not only the degree of motivation, but also the type of motivation provides insight into success or attrition. Students can be motivated by the intrinsic enjoyment and satisfaction of learning; the extrinsic rewards, both immediate (good grades) and long-term (desired career); or lack of punishment (poor grades or failure). Using the Academic Motivation

Scale, researchers determined that motivation affects all types of classes taken by students; however, the type of course (e.g., a foundational course) may influence the type of motivation that students experienced, with intrinsic and extrinsic motivation providing positive course results (i.e., grades) with amotivation providing more negative results (Vallerand et al., 1992). Additionally, Moore (2006) discussed students' motivations as related to their success in introductory biology courses, and found that, when comparing students' perception of their performances with their actual performances, students' intent, compared with their actual performances varied widely, with the common factor determined to be academic motivation. In a different study, Moore (2007) again examined similar patterns among developmental students and which factors could enhance success in these courses. Those students who were most motivated participated in success-building opportunities related to their courses, while others, who would presumably be similarly motivated due to their academic probation status, did not participate in these activities despite being least successful, based in lack of academic motivation (Moore, 2007). Furthermore, Martin et al. (2014) stated that motivation is a clear indication of success among community college students (measured in terms of persistence). In their qualitative analysis, the researchers examined success-related factors for 2-year community college students, the greatest factor was a strong sense of motivation, which was a point of interest for the current study. Moreover, Miller and Sundre (2008) investigated academic motivation through attitudes in a comparison between students' academic major courses and general education courses required by the institution. Using self-report survey data, these researchers evaluated types of motivation

in terms of mastery, performance, and avoidance. Their results indicated discrepancies between student motivations between courses for majors and the general education foundational courses, suggesting that students are less motivated to do well or complete such courses. Related to the current study, such information could inform the attrition rates in remedial courses, since these courses precede general education courses and could be perceived as further roadblocks to program completion.

Conceptual Framework

College education is highly emphasized in United States society, with benefits that include obvious cognitive/intellectual development, and career/skills development with obvious career and economic impacts, along with potentially profound changes in individual attributes with overall psychosocial and moral/values implications (Pascarella & Terenzini, 2005). However, attrition remains a significant problem. As previously discussed, the United States has the lowest college persistence rate among developed nations of the world (Symonds et al., 2011, p. 18). According to Pruett and Absher (2015), community college students in particular continue to struggle with persistence. In an attempt to understand this phenomenon, Tinto (1975) developed his model of departure from college, which categorized various factors influencing students' decisions to leave college, reasons for which ranged from goal ambiguity, academic difficulties, income/financial factors, to the inability to integrate into academic and social groups at the college. This model continues to be used widely among researchers, including analyses by Shepler and Woosley (2012), who discussed integration of students with disabilities into college, and Bergman, Gross, Berry, and Shuck (2014), who investigated

factors related to adult persistence and attrition, both of which are relevant to my analysis.

Tinto's (1975, 1993) models are not without controversy, though, due to the fact that Tinto provided only sociological factors influencing student attrition. In response to these concerns, Bean and Eaton (2000) offered their psychological model of attrition in an attempt to address psychological factors that students face when determining whether to persist or to leave. This model also continues to be used in research such as Johnson et al. (2014), who addressed issues of stress and student perception of campus climate in student decisions to persist or depart.

Both of these models contribute valuable factors in the analysis of student attrition; however, neither give a full picture of the factors that affect student attrition from college. For this, Roberts (2012) integrated both Tinto's (1975) sociological model with Bean and Eaton's (2000) psychological models to develop a general model of college student attrition that addresses both types of factors that influence the critical decisions to persist in college, or to leave, including passive or inactive attrition. This model provides the theoretical basis for my research due to its comprehensive nature, extensively addressing the many complex issues that can influence college persistence or attrition.

Also pertinent to my study, I investigated factors that influence attrition frustration intolerance and discomfort, as posed by Harrington (2010) in the frustration discomfort scale. For this factor, Juutinen and Saariluoma's (2010) pride-frustration model expanded on the concept of frustration as it influences behavior, relating student

tolerance levels for frustration to their persistence in remedial/developmental courses. According to Vansteenkiste and Ryan (2013), self-determination theory balances need frustration with need satisfaction as dialectical components of human behavior, with satisfaction of basic psychological needs considered crucial to appropriate psychological functioning (p. 264). While low need satisfaction can actually impede growth and wellbeing, need frustration can be detrimental, even harmful, to the individual. As the authors state, need frustration can result in stress, depression, or decidedly worse effects, dependent upon the overall resilience of the individual. While low need satisfaction is not as detrimental overall, frustrated needs may be more strongly related to psychological distress. This is a clearly relevant factor for my study because when students fail to achieve satisfactory progress in remedial courses, this could create low needs satisfaction. With some students, languishing in successive remedial sequences can create needs frustration, resulting in attrition. This question and concept are included as part of my study.

Key Statements and Definitions

Key terms relevant to my study include persistence, or the determination to continue with a course of action despite difficulties or obstacles to achieving one's goal, applied in this case to completing courses and educational goals (Pruett & Absher, 2015). In higher education, students who continue in their educational programs increase retention levels for their respective educational institutions, a critical factor for the industry and the focus of this analysis (p. 32). In contrast, attrition refers to the decision, active or passive, to leave, withdraw, or fail in some way to complete educational goals

(p. 32). Intervening factors for my study begin with motivation, the desire or willingness to do something, as well as the reasons for particular behaviors, which for the analysis factors for my study both relate to students and coursework related to educational goals (Deci & Ryan, 2000). Another key aspect in my study is the concept of frustration, an emotional response to opposition, such as in a perceived obstacle to or inability to achieve a goal (American Psychological Association, 2015). The next factor for this study is that of learning disabilities, which are potentially complicating factors in educational goal attainment, refers to a group of disorders demonstrated by difficulties in speaking, listening, reasoning, reading, writing, or mathematical capabilities and the organization of information, creating difficulties in the learning process if taught using conventional methods (Hammill et al., 1988; Learning Disabilities Association of America, 2012). These terms and concepts are discussed and defined in greater detail in Chapter 1.

Literature Review Related to Key Variables and Concepts

College Persistence and Attrition

As previously stated, college attrition in the United States is a significant, disturbing problem that impacts not only the individuals concerned and their futures, but the future of their families, communities, and the country as a whole. In their landmark 30-year (and ongoing) series of studies, Pascarella and Terenzini (2005) clearly stated the positive impact of college completion, including higher income, occupational status, and conferral of benefits upon subsequent generations of those who complete college. Synthesizing information gained from literature published over the previous decade, the

authors determined that students gain competence in the areas studied, gaining significantly in verbal and quantitative skills, along with cognitive and intellectual abilities. As students gain skills, they develop greater senses of identity and raise their individual senses of self-esteem. They gain greater senses of morality and moral principles, along with awareness of others' life situations, leading to expanded social consciousness. Long-term effects of college include much publicized improvements in job and socioeconomic status, reporting gains of between 20% and 40% over the course of the lifetime. The significance of these findings, gathered by Pascarella and Terenzini over the course of 30 years, are clear indications of the value placed on attending college in society, making higher education the rule rather than the exception in United States society.

Despite expectations of achieving a college education in the United States, according to Complete College America (2015a), only 4% of students complete associate degrees within the expected two years at 2-year/community colleges, while only 19% complete degrees at four-year colleges in the expected time frame. Once the duration extends beyond the standard time frame, attrition increases drastically (Complete College America, 2015a). This is further supported by the U.S. Department of Education (2015) that states that 41% of students at 4-year institutions do not complete their programs within 6 years, while 29% of 2-year college students do not complete their programs within 3 years (2015). Tinto, whose longitudinal studies on attrition help frame my study, discusses the implications of momentum in attrition (Tinto, 2013). Citing Newton's 1687 First Law of Motion, Tinto explains that once students begin to successfully complete

courses and accumulate credits, they gain a sense of momentum that propels them to continue in the process toward their goals (p. 1-2). As the preceding statistics demonstrate, students are largely unable to complete college in the standard time frames (2 or 4 years), which could be perceived as stalled momentum. As Tinto (2013) states, as long as momentum continues, students will persist, despite outside forces or confounding factors that could compel them to stop. If they falter or stall at some point, momentum is lost and students must reframe such setbacks and situations to regain momentum or they will be more likely to leave college. As previously stated, remedial education is notoriously problematic for impeding perceived progress since many of these courses are noncredit (pass/fail, satisfactory/unsatisfactory, etc.), with only approximately one-third of remedial students in community colleges completing remedial sequences. Tinto cites several examples of community colleges which have implemented accelerated remediation or corequisite remediation, along with cohort-based learning communities to provide social support for remedial students. For my study, this supports the premise that remedial education could be perceived as a frustration—creating roadblock to goal achievement.

Corroborating these findings, Abu, Adera, Kamsani, and Ametepee (2012) cited similar statistics in their review of current literature, noting that these rates rise dramatically for first-generation college students. Researchers stated that effective academic engagement and social interaction could assist in increasing retention. As one might expect, engaging with the course material increases GPA as well as potential for course completion (Pruett & Absher, 2015). As course completions continue, momentum

increases, along with persistence and eventually graduation rates, as previously discussed in Tinto (2013). This provides obvious implications for the potential of frustration development when students languish in remedial sequences, as suggested by factors examined in my study.

Remedial Education and Attrition

In a comprehensive analysis of data from CCSSE, Pruett and Absher (2015) reported that of approximately 400,000 students 60% were classified as developmental/remedial, indicating that they enrolled in one or more class intended to increase skills to college-level. Researchers analyzed the type of remedial course (reading, writing, math), academic engagement (hours spent engaged in educationally purposeful activities such as studying), number of developmental courses, class preparation, extracurricular college activities, and use of academic advising services, tutoring, tuition payment sources, parent educational level. Using binary logistic regression of a 10% random sample of student self-reported CCSSE data ($n = 23,665$), findings indicated that academic engagement was statistically significant in retention as well as academic preparation ($p < .001$), while type of remedial course provided mixed data, with remedial reading and writing courses (the focus of my analysis) were less likely to be retained than non-developmental students (23.3% and 15.1%, respectively), while interestingly, developmental math demonstrated a 23% higher rate of retention. The number of developmental courses taken, however, did not reach significance, although GPA did ($p < .001$), with success rates increasing by 34.7% for each unit of increase in GPA, which is a factor also under further consideration in relation to ADHD,

as posed by Gormley et al. (2015). This study provides important information for my study regarding the impact of remedial reading and writing courses, focusing research on remedial reading and writing courses and retention factors in particular. Additionally, according to Fitzhugh (2011), college instructors surveyed by the *Chronicle of Higher Education* noted dropping levels of college-level skills, particularly in reading and writing. Of those surveyed, 91% of instructors indicated students were ill-prepared in writing, 89% were under-prepared in reading, and 91% felt that students had little or no research skills (p. 413). This places more and more students in remediation or at-risk for writing skills, which further illustrates the critical importance to understand the complex factors influencing student success and attrition from college, particularly from reading and writing developmental education.

Like Pruett and Absher (2015), Bremer et al. (2013) also discussed the effects of remedial courses on community college student retention. Using secondary data gathered for further analysis on retention, researchers examined GPAs in relation to enrollment in developmental English, reading, and writing (DERW) and developmental math (DM). Unlike Pruett and Absher's (2015) findings, Bremer et al.'s (2013) results of logistic regression indicated higher persistence among those who enrolled in DERW the first term courses ($p = .021$; $n = 7,898$) than those who did not enroll in such courses. Students who enrolled in DM courses were also more likely to be retained to the second semester ($p < .001$), while reading ability demonstrated borderline significance ($p = .052$). Results differed for second term persistence, however, if students enrolled in both DERW and DM courses simultaneously, negating persistence rates, consistent with Pruett and Absher

(2015). In relation to my analysis, these factors are significant in demonstrating that the longer students remain in remediation, momentum is lost and students face the proverbial “bridge to nowhere” (Tinto, 2013; Complete College America, 2012). When feeling trapped in such situations, frustration may tend to increase, potentially influencing intention to persist toward students’ educational goals, which is the focus for my study. Again, corequisite remediation has demonstrated success with supporting students through college composition courses (Adams, 2017); however, in addition to this, my study also focuses on person factors that further affect persistence in an attempt to increase our understanding of persistence or attrition in these courses.

Despite the demonstrated benefits of college education, Hern (2012) stated that in a multistate study of 57 community colleges, more than 90% of students who demonstrated lower skill levels were weeded out even before they even began college-skill level work (p. 60). In a secondary analysis of recent studies, Hern supported the idea that length of time in developmental sequences leads to higher attrition rates, and argued for accelerated remediation even for low-skill students in order to limit their time in the process. Problematic, however, is the still less than 50% pass rate for students in these accelerated or corequisite remediation courses (p. 64). Critical to my study, Hern suggested that students who languish in remediation develop a sense of hopelessness about their chances of success not only in the course but in their overall educational goals (p. 64). This sense of hopelessness, among those who have low tolerance for frustration, could be the mitigating factor that stops students from completing their educational goals.

While Hern's analysis is not a study in itself, it considers recent studies and succinctly stated a serious problem facing remedial students in community colleges.

In a report prepared under the auspices of the National Center for Education Evaluation and Regional Assistance, for the Institute of Education Sciences by Regional Educational Laboratory Northwest, Hodara (2015) found much higher remediation levels – 75% – among recent high school graduates at community colleges in Oregon ($n = 101,812$). The author was particularly interested in potential connections between experiences in high school and college remediation among recent graduates. As previously mentioned, students who entered college with lower skill levels were less likely to persist to program completion than those who entered with higher skill levels. In Hodara's (2015) analysis, student enrollment in dual-credit programs (credit for both high school and college courses) was tracked to determine if students were later placed in remedial courses when enrolling in college. Using regression analysis, demographic factors, Individualized Education Program (IEP) status, dual-credit status, grade repetition, and absenteeism were analyzed in an attempt to determine what, if any, factors were predictors for remediation. While general enrollment statistics showed that approximately 75% of students did not demonstrate college-level skills and required remedial courses, students who took dual-credit courses in high school were less likely to require remedial education. As expected, students who required remediation in high school due to achievement test results were more likely to require remediation in college. These students typically enrolled in 2-year colleges after college; those who started at lower reading skill levels in particular spent more time in college and were less likely to

complete their educational programs, demonstrating a 26% completion rate. This data further reinforces the need to understand why these students are less likely to persist in their programs and further justifies the factors for analysis of my study.

As mentioned, persistence rates among remedial students have generated countless studies to determine the causes of attrition. In a review of current literature, Bettinger, Boatman, and Long (2005) examined lack of college-level skills incoming students, stating that remediation is the “point of entry for 80% of four-year students and virtually all two year students” (p. 94). Researchers state that this makes developmental/remedial courses one of the most-used and critical sources of scaffolding used to develop skills among those who wish to attend college, with 51.7% of students who enter community college requiring some form of remediation (Complete College America, 2015). Bettinger et al. (2005) further stated that remedial course outcomes and attrition can be a conundrum, maintaining that it becomes difficult to determine if it results from lack of preparedness or if caused by the remediation process itself. This underscores the fact that if students do not persist through these courses, both the college and the student have failed in their educational goals, emphasizing the need to examine the success rates for students in reading and writing remediation.

Also discussing college attrition rates, McMahon (2015) suggested various areas of focus for increasing retention, including developmental (remedial) courses. Citing data from numerous current studies, McMahon pointed to developmental education as an area of concern, albeit success for students who persist. The author stated that students who enrolled in developmental courses were more likely to persist than those who did not

enroll in these courses. Further, students who enrolled in developmental courses and did not complete these courses still had an overall higher retention rate than those who did not. In other words, enrolling in a developmental course and not completing it but then moving to the next course in the requisite sequence without credit for the remedial course carried a higher chance of persistence for these students (p. 3). This questions, as with many studies, the necessity of full-term, stand-alone remedial courses where students could receive corequisite remediation or other alternative forms of skills development that would take less time and provide the same results. Alternate forms of remediation could clearly avoid developing hopelessness, frustration, and the potential for attrition, as investigated by factors included in my study.

Alternatively, DeNicco et al. (2015) stated that there is no clear benefit for enrolling in developmental education, stating that such courses have actually demonstrated negative effects on those who enrolled in them. Researchers followed a cohort of 1,800 students, beginning in high school and following them through a public state college system, to determine what factors influenced attrition/persistence. Analyzing various factors including demographics, skills levels, attendance rates, high school dropout rates, etc., the authors stated that overall progress toward students' educational goals, particularly in their first/freshman year, is most significant in predicting persistence. Using logistic regression, freshman GPA and earned credits were each significant at $p < 0.1\%$. This is particularly interesting from the standpoint that students as face a variety of obstacles during the enrollment process and throughout their first year, the significant factor influencing persistence is GPA and credits successfully

accumulated. This indicates that students are most concerned about performance in their classes (as expected), which, if unsuccessful or delayed through repetitive remedial sequences, could affect frustration levels and decisions to persist, which is the object of investigation for the analysis factors included in my study.

In a further analysis, Scott-Clayton and Rodriguez (2012) also found that traditional remedial education does little to address skills deficits for students who test into them. Using regression discontinuity methodology (McCrary tests) on data from six community colleges gathered over the course of 8 years, researchers found that of a sample size of 100,250 students, 90,342 of them required remediation. However, the authors claimed students gained few benefits from remedial courses, which had no positive effects on any college outcome; they called remedial courses “diversionary” at best, particularly because students do not develop skills and additionally, students earn no credits toward completion of their degrees or programs. They further stated that the anticipation of remediation in no way discourages student enrollment, providing implications for the process rather than the need for building skills. Researchers examined pre-enrollment factors and found that 17% of students who take placement tests never enroll in college, potentially due to remedial placement, while 64% had dropped out after three years, 24% were still enrolled after 3 years (in a 2-year community college system), and only 12% had either completed their programs or transferred to a 4-year school. Focusing on reading/writing remediation (as in the factors for investigation in my study), the authors found no evidence of diversionary effect of placement in remediation; albeit there is no evidence of a “discouragement effect” as

posed by Martorell and McFarlin (2011); however, those who enroll in remediation are less likely to persist to program completion ($p = .1$; Scott-Clayton & Rodriguez, 2012, p. 22). Again, supported by these conflicting analyses, the fact remains that students in remediation may experience difficulty in completing their educational goals, further emphasizing the critical need to examine remedial procedures and their benefit or detriment to the educational processes.

In a key analysis for my study, Bahr (2012) addressed remediation and attrition in terms of types of attrition, duration of enrollment, and student skill levels for students in remedial reading and writing sequences. Types of attrition include skill-specific (lack of persistence to complete remediation), nonspecific, and course-specific (particularly difficult courses in the remediation sequence). Duration of enrollment is key because according to Bahr, the longer students spend in remediation, attrition rates increase significantly, becoming, as the author states, “a structural barrier to college-level skills attainment” (p. 663). Impacting both of these is the level of skills that students bring to their educational goals as well as factors related to enrollment. The researcher analyzed patterns of enrollment, operationalized as absolute delays (temporarily “stop out” from college/courses) or relative delays (failed to enroll in subsequent remedial course/s despite continuing enrollment). Further, persistence was determined based on passing grades in remedial courses, e.g., successful completion demonstrated standard letter grade of A, B, C, or Credit/Pass for the course. Using logistic regression, data indicated that while likelihood of attaining college-level skills varies with length of enrollment, achievement gaps continue to exist despite extended duration of enrollment periods for

some students. As in other studies, there is significant evidence that non-passing grades greatly decrease the chance of persistence particularly in point-of-entry courses; however, the type of attrition tended to indicate nonspecific attrition (not skill-related). This indicates that there are additional factors to consider when analyzing attrition/success rates, including potentially mitigating factors. Due to the fact that such failure to progress could play a role in development of frustration, this supports analysis of frustration as a factor in attrition, which is one of the areas of focus for my study.

The potential for long-term, negative implications of remedial education are further demonstrated by Crisp and Delgado (2014). Using existing data from the Beginning Postsecondary Students Longitudinal Study, the authors analyzed demographic characteristics of 23,090 students who were placed in developmental courses ($n = 2,780$), finding that community college students who enrolled in remedial courses tended to differ from those who did not in terms of first-generation college student status, gender, ethnicity, academic preparation/high school experiences, and delay of entry into college. Using hierarchical generalized linear modeling, researchers found a significant negative relationship “between enrolling in English developmental courses and the odds that a student would transfer to a 4-year institution even after minimizing selection bias and controlling for variables previously shown to be related to community college student success” ($p < .05$; p. 110-111). This analysis provided information about characteristics of the typical developmental student, who tends to be a racial minority and first-generation college student, leading to questions beyond the scope of this study, such as at-risk status early in the elementary or secondary school process, lack of social

support or emphasis on the benefits of college, or simply financial support through the process. This study does not address such unobservable factors such as nonspecific attrition, as discussed by Bahr (2012). Interestingly, this study found that students who enroll in remedial courses are slightly more likely to persist compared to non-remedial students (79% to 77%), contrary to numerous other studies (e.g., Complete College America, 2014; Pruett & Absher, 2015). Despite these inconsistencies, the difficulties faced by remedial students is reinforced through data about success rates in transferring to 4-year institutions. This underscores the necessity for further analysis on the multiple factors which could affect student success to determine the best course of action to improve student persistence.

Contrary to Crisp and Delgado (2014), and consistent with other studies, Stewart, Lim, and Kim (2015) found that students who were placed in remedial courses were less likely to persist than those who held college-level skills prior to enrollment in college ($n = 23,090$). These researchers investigated further connections between persistence and factors such as ethnicity, financial aid, GPA and family income. Using multiple regression, the authors found that high school GPA was a significant predictor of success in college, while those with lower GPAs were less likely to persist ($p < .01$), again suggesting that students who lack skills in college may have struggled earlier in the educational process. Further, using ANOVA, remediation did not achieve significance in supporting persistence in college ($p = .083$), supporting findings of other studies. The authors suggest that support services such as tutoring, mentoring, and early intervention would improve academic skills deficiencies and increase persistence; however, in data

from the CCSSE as analyzed by Pruett and Absher (2015), tutoring in particular was not found to be a predictor of success, which leads to questions about using corequisite remediation models that emphasize tutoring-type sections taken alongside college-level courses. These findings further support the obligation to determine what factors that impede success and at what point in the educational process these factors become relevant and influence the direction of the student's future.

Frustration Discomfort and Learning

When examining persistence and attrition in college, particularly in remedial courses, it is critical to develop an understanding of potentially mitigating factors that may influence students' decisions to persist or abandon their educational endeavors. Frustration is considered a negative emotion which can appear when one encounters perceived or real obstacles in the path of completing a task or attaining a goal or expectation (Handa, 2003). When perceived needs are seen as blocked, low needs satisfaction or needs frustration occurs, which can result in negative and/or maladaptive behaviors among some (Vansteenkiste & Ryan, 2013). While no studies directly analyze frustration among students in remedial courses (as per my study), frustration has been analyzed in other education-related pursuits, which are addressed here. Academic progress, as discussed, is traditionally measured in terms of credit earned, GPA, and progress toward goal completion.

According to Wilde (2012), psychological factors such as academic self-efficacy may also comprise up to 14% of the variance in GPAs. Wilde's analysis examined the relationship between various factors to attempt to predict academic persistence. Among

105 undergraduate students, academic self-efficacy, or students' sense of confidence in their abilities to successfully accomplish academic tasks at the appropriate level, based in outcome expectations and performance goals, was determined to be significant in predicting persistence (p. 1). Additionally, individuals who tolerated delay of gratification were demonstrated to score better on college entrance exams, resulting in ability to predict success. Further, student engagement (also termed "academic engagement"), or the amount of time students spend studying or practicing a subject, was determined to be a better overall predictor of student persistence and success, with multiple factors overlapping at times when considering their effects on persistence. Frustration intolerance is the "inability or unwillingness to persist in an activity due to unpleasant feelings associated with the task" (p. 3). Frustration intolerance can increase procrastination and problem avoidance, reduce student engagement and study time (leading to lower grades), and increase fear of failure. In Wilde's analysis, frustration intolerance was measured in relation to GPA among 105 undergraduate students in an attempt to predict academic success, measured in terms of persistence toward graduation. Wilde administered Harrington's (2005) Frustration Discomfort Scale to full- and part-time education students along a full range of academic levels (freshman through graduate students). Using multiple linear regressions, results determined that frustration intolerance accounted for 23% of the variance in predicting GPA and persistence among all levels of students surveyed. The Frustration Discomfort subscale Achievement Frustration was the best single predictor of GPA ($p = .000$), the second best predictor was Emotional Intolerance ($p = .005$), while the third subscale, Entitlement, was also

statistically significant ($p = .021$). The remaining subscale, Discomfort Intolerance, did not reach significance among those participating. Despite relatively low participant levels ($n = 105$) and even smaller number of first-year students (13), findings present an analysis worth replicating, as in the investigated factors for my study, due to the connection of frustration to typical features of ADHD (see Scine & Norvilitis, 2006). Further, conducting a similar analysis when applied to students in remedial courses could provide significant information as to attrition, providing an understanding of why students walk away from the potential benefits of a college education. This knowledge could lead to methods of assisting students who test high in frustration intolerance to be able to work through such frustration as well as for educators to help students avoid some of the frustration-causing aspects of remedial courses.

An additional illustration of the impact of frustration in the learning environment, Khanlarian and Singh (2014) explored various mitigating factors in online learning. In an analysis of $n = 368$ students, researchers surveyed students about perceptions, feelings, and beliefs of the web-based learning environment, particularly concerning homework. The authors noted that academic achievement goals are significantly tied to student focus on learning, based in performance and/or mastery goals, self-efficacy, locus of control, as well as outcome expectations. The authors cited four reasons for termination of goals: (a) aspiration achievement (goal attained), (b) satisficing (close to goal), (c) impatience (tolerance level had been met or exceeded, and (d) discouragement (tried and failed to achieve goal) (p. 138, 142). The last two reasons were connected to lack of success, associated significantly with frustration among participants. In a longitudinal design,

multivariate analysis and structural equation modeling showed that user frustration, or frustration with technology, and/or experiencing technical difficulties that impeded student progress, demonstrated a significant effect on student performance, thereby success, causing students to stop short of goal attainment ($p < .001$). This provides crucial information as to the critical effect of frustration on goal impediment in the college setting. This study analyzed participant experiences in a large, 4-year institution, whereas the my study suggests analyzing similar factors among remedial students at two-year colleges; however, this study further validates the connection between frustration and student goal attainment, providing additional basis for the current study.

Also researching frustration among learners in the college setting, Sierpiska et al. (2007) looked not at discomfort or intolerance for frustration within students (as investigated in my study), but sought to identify sources of frustration in the remedial math sequence at a large, four-year institution in an attempt to alleviate and remove some of these inhibiting factors. Conceptualizing frustration as an emotion that accompanies disappointment (Handa, 2003), this mixed methods analysis researched sources of frustration among $n = 96$ students, such as being required to take remedial courses, the pace of the courses, inefficient learning strategies, differing patterns of thinking/learning, logic/reasoning difficulties with math, insufficient academic support, and poor achievement. Sierpiska et al., (2007) indicated that over 40% of students in remedial math sequences are negatively impacted by such sources of frustration in their learning experiences, although cautioning that these results may not be generalizable. This contradicts findings of Pruett and Absher (2015), who found that students in remedial

math sequences increase their odds of success by 23% compared to students who did not take such courses, indicating that such frustrations do not overwhelmingly impede success. However, Sierpinska et al.'s (2007) analysis identifies several aspects of college remedial courses that are worth consideration when focusing on remedial reading and writing, which are the focus of investigation by my study.

While not addressing remedial courses, Lewis and Dodson (2013) clearly demonstrated the different expectations between high school and college writing, particularly between creative writing typically taught in high school and early college and the expectations of scientific-based research writing. In an analysis of recent studies and literature, the authors discussed the gaps students experience as they attempt to learn the requirements for research papers – succinct, factual statements supported by documentation – while students are typically taught the creative writing process, which includes elaborative, inventive sequences that are highly developed and imaginative. This creates considerable frustration for students, where research-based papers are considered as obstacles in their learning process rather than building blocks in their skills development. While students in remedial writing sequences are taught basics of creative writing, the authors clearly demonstrate an important aspect in the differing expectations and processes of college-level writing and the frustration students can experience with writing. Such frustration is the focus of my study, which will examine frustration discomfort/intolerance among students in college remedial reading and writing courses.

Further demonstrating the critical factor of frustration and learning, Capdeferro and Romero (2012), analyzed online learning and the collaborative process. To meet the

demands of the e-learning environment, best practices suggest incorporating group support through collaborative learning that may be missing in the online learning situation. Group processes can present difficulties in any collaborative environment, including education, workplace, etc., where issues such as unclear goals, unclear communication, varying levels of skills and competences, uneven workloads, and other factors confound the group experience. These can become magnified when coupled with online learning, which adds its own set of differences from face-to-face experiences. For this particular analysis, researchers developed and administered the *Online Collaborative Learning Experiences Frustration Questionnaire*, which utilizes a series of closed- and open-ended questions about student situations, their prior experiences with online and collaborative learning/teamwork, levels and perceptions of frustrations as to each student's intended goals. Using multiple regression analyses, findings indicated learners felt they were most impacted by unrealistic expectations, unclear guidance, and uncertainties with interdependence ($n = 40$). Of most interest to the current study was the section dealing with how frustration affected perception of participating in the learning experience. While some participants indicated no frustration, 60% indicated frustration that affected their perception of the experience. Further, across all variables, all participants experienced frustration to some extent which affected their learning experience, although not all factors relate to my study. Despite the low number of participants ($n = 40$), this study clearly demonstrates the impact of frustration on the learning experience and student outcomes, as well as the significant concerns about frustration as a factor that can seriously affect the college learning experience. Since

more and more classes are being offered online – including remedial courses – these findings hold serious implications for attempting to offer remedial or corequisite reading and writing courses online, an important implication to consider as factors for my study and future studies.

Attention-Deficit Hyperactivity Disorder

It is impossible to discuss learning and frustration tolerance without examining potentially mitigating factors such as learning disabilities, of primary interest among which is ADHD. According to Zimbardo et al. (2014), ADHD is characterized by inattention, poor impulse control, difficulty in concentrating, and high levels of distractibility over a period of time. The disorder is found in approximately 3-7% of school-age children in the United States, with symptoms among approximately 50% of individuals spontaneously disappearing as the individuals approach and enter adulthood (Santrock, 2011; Zimbardo et al., 2014). According to Boyd and Bee (2012), symptoms are divided into two subtypes, including ADHD/hyperactive/impulsive type, ADHD/inattentive type, with some children diagnosed with symptoms of both (ADHD/combined type). Further, according to Santrock (2011) individuals with ADHD have difficulty focusing on one task for any period of time, and may either become distracted or inattentive, with difficulty sustaining attention the most common type of attention problems displayed. Additionally, frustration becomes a greater factor in those with ADHD, as discussed by Scine and Norvilitis (2006). Children diagnosed with ADHD and those without were presented with a math task of increasing levels of difficulty. While those with ADHD demonstrated similar levels of accuracy, fewer

problems were completed, with participants quitting the task sooner and reporting higher levels of frustration with the task than those who did were not diagnosed with the disorder. This directly informs my study from the perspective that those with ADHD displayed higher levels of frustration and less persistence in prolonged tasks, as students with ADHD, whether diagnosed or undiagnosed, may be less likely to persist in college remedial courses due less emotional regulation and higher levels of perceived frustration. Further, according to Willcutt and Pennington (2000), students with ADHD were more likely to present with reading disabilities, giving support for analyzing student attrition in remedial reading and writing courses, as investigated in my study. Mamiseishvili and Koch (2011) stated that nearly 25% of students with disabilities did not return after their first year in college, while nearly 51% did not return after their second year. Included among these, ADHD comprised 17.3% of the diagnoses. Oguntoyinbo (2012) stated that an estimated 50% or fewer of students who have diagnosed learning disabilities actually report the disability and/or utilize any available resources, largely due to associated stigma with the disability. However, this is a disability that is recognized under IDEA (2006), affording accommodations and support for those with the diagnosis. This underscores the critical importance of first, diagnosis of the disorder, and second, providing appropriate support for these students in order to guarantee their success. As an additional basis for understanding ADHD, Berger (2011) described three primary symptoms, including inattention, impulsiveness, and hyperactivity, which, as described above, can vary from individual to individual. The latter two have been combined into effects of the same symptom, impairing self-regulation in those who have the disorder,

even from early life. Reports of irritability, negative emotionality, and conduct problems have been noted as early as 3 to 4 months of age, and later, lower academic achievements tend to plague those with the diagnosis. Throughout adolescence and into adulthood, these symptoms were expressed in hyperactivity, impulsiveness, and disorganization, resulting in poor academic and employment success and retention, resultant from lower levels of inhibition regulation and control. As discussed by Quinn (2013), many students with ADHD diagnoses do not receive, or take advantage of, accommodations and support provided by colleges, despite learning disabilities nearly doubling from 2001-2009 (U.S. Government, 2009).

Typically a concern faced in childhood, more emphasis is being placed on those with ADHD and their challenges faced in college, as researched in my investigation, and throughout life, however, as observed by Alao (2015), a “surprising lack” of studies have analyzed the implications of adult ADHD among college students, leading one to question if the lack of diagnosis and treatment could be one of the causes of college attrition, which will be addressed in the current study. In a qualitative analysis, Meaux, Green and Broussard (2009) conducted semi-structured open-ended interviews with adult college students with ADHD to determine their perceptions, challenges, and adaptations as they entered college ($n = 15$). For these interviews, students were asked to list information that helped or hindered their adaptation to college. Significant to the current study, students listed self-regulation factors such as accountability, attaching consequences to actions, removing distractions, and detailed scheduling as factors which assisted in the transition. This reinforces the factor of self-regulation for those struggling

with ADHD. Despite the small sample size, this analysis is important due to the fact that students who implemented such strategies tended to be more successful in completing their programs, despite difficulties in the process as these lessons were learned. More significant is the self-reported information related to the struggles with self-regulation that such students faced, which connects to my study as correlates of frustration-inducing phenomena that can impede progress toward educational program completion.

Additionally, students with ADHD who anticipate college may not accurately or adequately assess their readiness and coping abilities. According to Stamp et al. (2014), students with ADHD had difficulties accessing sources of support and meeting demands of college students in general. In a qualitative analysis of 12 students with ADHD, using semi-structured interviews, students were positively impacted by their perceived passion, energy, and likeability in social settings; however, 50% also experienced high levels of anxiety and feelings of being overwhelmed by the situations. Furthermore, 75% stated that they did not cope well with educational settings, feeling different, ashamed, and inadequate in various forms in accomplishing their work, and unable to ask for help. Despite the small sample size, this qualitative analysis provided for deeper understanding of the connection between ADHD and emotion and coping, and further underscores the importance of diagnosis of ADHD, understanding the disorder, and receiving proper assistance in order for success in reaching educational goals.

In addition to self-regulation issues, further characteristics of ADHD is lack of impulse control and emotional regulation, generally influencing the individual's ability to adapt to changing situations and challenges (Burns & Martin, 2014). In an analysis of

current research, the authors state that those with ADHD have substantial difficulty regulating thoughts, emotions, and behaviors related to tasks, and typically lack behavioral inhibition and self-regulation, which significantly impacts management, completion, and outcome of that task. Further, the authors incorporated the concept of adaptability with ADHD. Adaptability is the capacity for cognitive, emotional, and behavioral modifications as needed, and making appropriate responses to new, changing, or uncertain situations (p. 228). Typically, individuals with ADHD are low in ability to regulate behavior, making them less likely to plan and respond appropriately, essentially impeding their ability for cognitive regulation necessary for successfully navigating and adapting to various situations (p. 230). This can lead to temporal discounting of future rewards and/or emotional hyper-responsiveness, which, in academic settings, can lead “...students with ADHD [to] express frustration, irritability, and hostility more easily than their non-ADHD peers” (p. 231). After administering the Adaptability Scale (Martin, Nejad, Colmar, & Liem, 2012), Burns and Martin (2014) found that while perceived control is a critical component of adaptability, individuals with ADHD lacked this emotional and cognitive regulative function, which may place them at an operational disadvantage when faced with situations such as college, where adaptability to novel, changing, or uncertain situations. This supports findings by Semrud-Clikeman, Walkowiak, Wilkinson, and Butcher (2010), who found that executive function, which modifies behavior to adapt to and focus attention on dynamic situations by regulating attentional resources. This provides obvious implications for students with ADHD as they

enter college, and even deeper implications when they are placed in remedial (non-credit) courses that prove difficult or take longer than anticipated.

Additionally, Bitsakou, Antrop, Wiersema, and Sonuga-Barke (2006) demonstrated that among 49 adults with ADHD, delay frustration, a measure of delay intolerance, was significantly higher than in those without the diagnosis, increasing significantly with the degree of diagnosis. Using univariate analysis of the covariate, researchers determined that frustration increased significantly with time delay ($p < .05$), providing important implications of frustration in achievement in the educational process. Despite the small sample size, this clearly illustrates the importance of diagnosis and strategy implementation to increase the potential for success in those with this disorder.

As discussed, impulsiveness and lack of self-regulation can seriously impact the success of students with ADHD, as with frustration intolerance. As discussed by Field, Parker, Sawilowsky, and Rolands (2013), if ADHD is diagnosed, students can be coached on improving self-regulation for learning and study strategies for higher levels of retention and success in college. In a study of 160 students, those who had been diagnosed with ADHD were divided into two teams, one based in coaching and a control group that received no coaching. Those receiving the coaching program received strategies for success which incorporated weekly phone calls to discuss implementation of strategies for learning and self-regulation programs. Using MANCOVA, results indicated that students who were coached in success strategies dramatically increased their success rates than those who did not. This provides solid evidence that once diagnosed, these individuals can receive strategies that improved success overall ($p <$

.05), indicating that diagnosis, counseling and coaching, combined with appropriate accommodations, are critical support mechanisms that facilitate the success of students with ADHD. This is a serious implication for social change for my study that suggests students should be encouraged to be tested and, if diagnosed with ADHD, provided with appropriate scaffolding for success to improve retention and reduce frustration-inducing problems which such students face when entering college.

Furthermore, in a study of college students between 18 and 23 years of age, Weyandt et al. (2013) analyzed 24 with ADHD and 26 without were analyzed in terms of psychopathology, academic performance, organizational skills, and social relationships. Of significance for my study were emotional regulation factors, where 2 X 2 ANOVA results indicated ADHD students rated significantly higher in levels of emotional liability ($p = .014$), supporting investigation of frustration as a factor in success. Different from other studies, students expressed no difference in positive/negative affect, where other studies have found higher levels of negative affect. Also using 2 X 2 ANOVA, academic performance revealed significant effect for students with ADHD, reporting significantly lower grades on course assignments than non-ADHD students ($p = .016$) and organizational skills ($p < .001$), implicating success factors among ADHD students which could impede achievement.

Additional implications of ADHD are discussed by Bilkey et al. (2014) who stated that only 1 in 10 individuals who are afflicted with ADHD actually receive the diagnosis, which amounts to over ten times the number of diagnosed individuals who struggle with the symptoms and related consequences of the disorder. As adults, these

individuals struggle with academic and professional success, strained relationships, and diminished overall well-being. Following a case study of an individual diagnosed as an adult, the authors suggest further testing, using the ASRS-V1.1 (Kessler et al., 2005) – utilized widely by the World Health Organization and many others – and related medical and behavioral treatment as needed for overall life improvement. The Bilkey et al. (2014) study further supports the implications of untreated ADHD and the use of the ASRS-V1.1 (Kessler et al., 2005), as used in my study. In order to facilitate success for individuals with ADHD, they must first be diagnosed, then provided with the necessary support for success. As in the analysis factors for my study, Pazol and Griggins (2012) proposed comprehensive ADHD assessment in college. They stated that the disorder, once diagnosed in childhood and thought to be outgrown, often continues well beyond adolescence into adulthood, affecting every aspect of individuals' lives. However, the authors stated that with number of students reporting disabilities increasing each year, diagnosis becomes increasingly complex due to self-report assessment along with potential comorbidity of symptoms. However, the authors stated that self-report assessment is recommended as a starting point for further comprehensive assessment, leading to appropriate treatment and, if needed, approved educational accommodations based in the learning situations.

In an additional analysis of 237 college students from India, Jhambh, Arun and Garg (2014) diagnosed ADHD using the ASRS-V1.1 (Kessler et al., 2005), as investigated among the analysis factors for my study, resulting in 56 students (23.6%) receiving the diagnosis. Researchers further administered the Wender Utah Rating Scale

(Ward, Wender, & Reimherr, 1993) which examines retrospective information from childhood to clarify and refine ADHD diagnoses, resulting in 13 students (5.48%) being diagnosed with ADHD. These individuals had significantly lower levels of self-esteem ($p < .01$) and emotional instability ($p < .01$). This provides further indications for testing students for frustration discomfort, however, suggests strongly that students who test positive for ADHD should receive additional testing for refinement of the diagnosis.

Also researching negative emotion among students with ADHD, Kearns and Ruebel (2011) analyzed 64 college students with ADHD and 109 without. Individuals with ADHD typically exhibit poor emotional regulation as previously mentioned, and in this analysis, 3 X 2 ANOVA (emotion type x gender – emotive/anxiety/depressive) results indicated that students with ADHD reported significantly higher levels of negative emotion compared to those without, across both ADHD types (inattentive type/combined type) ($p < .05$). Additionally, females reported higher levels of negative emotion than males ($p < .05$). This study utilized the Attention-Deficit Scales for Adults (Santo & Murphy) which rates similarly with Wender Utah Rating Scale (Ward et al., 1993), according to McCann & Roy-Byrne (2004), who also suggest further evaluation to confirm diagnoses of ADHD. However, findings of Kearns and Ruebel (2011) further support the inclusion of frustration as a negative emotion among college students when analyzing factors that influence success or attrition in college.

The implications of ADHD are extant not only in the educational context, but throughout the life of the individuals involved. Citing several studies, Küpper et al. (2012) investigated the life-long impact on the occupational health among individuals

diagnosed with this disorder. Individuals with ADHD face considerable economic impact due to higher levels of unemployment and reduced productivity and absenteeism, higher incident of accidents and injuries, and behavioral impacts due to higher levels of irritability and low frustration tolerance. This again demonstrates the critical importance of diagnosis and providing strategies for appropriate functioning throughout life for those with this disorder. Knowledge of this diagnosis and the related issues are important for individuals who may be struggling with the disorder in order to understand and utilize basic strategies for appropriate functioning in society. Determining these factors for college students can have lifelong implications that impact not only these individuals but their families, coworkers, and the larger society as a whole, an important consideration and basis for my study.

Summary and Conclusions

In summary, the benefits of college education have long been established, including higher income, occupational status, and conferral of benefits on future generations of those who complete college. In addition to career skills, students gain verbal, quantitative, cognitive and intellectual skills. Long-term effects of college include 20-40% socioeconomic gains over the course of the lifetime. Yet, despite expectations of achieving a college education in the United States, only 4% of students in the complete associate degrees within the expected time frame at 2-year/community colleges. Once the duration extends beyond the standard time frame, attrition increases drastically, with over 70% of community college students failing to complete their programs in 3 years (U.S. Department of Education, 2015). Many of these students are among the 60-75% of

students who test into remedial (non-credit) courses (Hodara, 2015; Pruett & Absher, 2015). Once students enter remedial reading and/or writing courses, completion rates were 23.3% and 15% lower, respectively, which has led to many analyses of the effect of the perception of languishing in these courses. Studies have long connected the potential for reading and writing difficulties among those with ADHD (Willcutt & Pennington, 2000). Bilkey et al. (2014) reported that only 1 in 10 individuals who are afflicted with ADHD actually receive the diagnosis, while less than 50% of those diagnosed receive no assistance or accommodations for this disability (Oguntoyinbo, 2012). Those with ADHD typically suffer from difficulties with emotional self-regulation, among them, frustration intolerance (Burns & Martin, 2014). While frustration discomfort and intolerance has been investigated among education majors as related to their GPAs (Wilde, 2012), it has not been addressed as a potential factor in college attrition among those in remedial education reading and writing courses at community colleges in the United States. It was the purpose of this analysis to investigate this potential connection through the administration of self-report surveys to remedial reading and writing students at community colleges in attempt to determine if undiagnosed ADHD and frustration intolerance play a role in attrition. This connection will provide assistance to students who may otherwise walk away from the benefits of college due to a disability that is protected under IDEA (2006). Details of analysis and methodology follow in Chapter 3.

Chapter 3: Research Methods

Introduction

College education provides many benefits, not only for individuals, but also their families and society as a whole. The general expectation in the United States is that most individuals will pursue and achieve a college degree. As I previously discussed, only 4% of students in the United States complete associate degrees within the expected timeframe at 2-year/community colleges, with only approximately 30% achieving this goal within nearly double the expected timeframe in community college settings (U.S. Department of Education, 2015). Remedial students fare much worse, with completion rates in remedial reading and writing courses that are 23.3% and 15% lower, respectively; this has led to many analyses of the effect of the perception of languishing in these courses (Pruett & Absher, 2015). The connection between ADHD and reading/writing difficulties has long been established, with approximately 10% of those afflicted with ADHD receiving a formal diagnosis, and fewer than 50% of these individuals actually receiving assistance for the disability (Bilkey et al., 2014; Oguntoyinbo, 2012; Willcutt & Pennington, 2000). Additionally, frustration discomfort/intolerance is a typical feature of ADHD (Scime & Norvilitis, 2006); however, this factor has yet to be investigated as a potential component in remedial reading and writing courses at the community college level where many at-risk students begin their college pursuits. Furthermore, the types of motivating factors can greatly affect students' desire to participate and persist in courses, which can additionally influence completion of courses as well as degree programs (Koludrović & Ercegovac, 2015).

In this chapter, I detail the methodology used to investigate these factors in college attrition for community college students, beginning with an overview of the research design for the study. This is followed by a discussion of methodology for the analysis, including population, sample and sampling procedures, recruitment of sample and data collection, and description of variables. The chapter concludes with a description of threats to the validity of the analysis, including internal and external validity; ethical concerns, including Institutional Review Board (IRB) approvals; data protections; and potential conflicts of interest; as well as dissemination of information.

Purpose

In this study, I employed self-report survey methodology with a cross-sectional strategy to assess student frustration discomfort/intolerance and ADHD as mediating variables for the prediction of academic attrition or persistence for students attending one of two types of remediation for students with reading/writing deficiencies. I developed the following research questions to guide this study:

Research Question 1: Does type of intervention for reading/writing skill deficits predict the likelihood of persistence and/or retention among college students receiving the intervention?

Research Question 2: Does frustration discomfort predict the likelihood of persistence and/or retention among college students receiving an intervention for reading/writing skill deficits?

Research Question 3: Does student motivation predict the likelihood of persistence and/or retention among college students receiving an intervention for reading/writing skill deficits?

Research Question 4: Does ADHD predict the likelihood of persistence and/or retention among college students receiving an intervention for reading/writing skill deficits?

Research Question 5: In addition to type of intervention received, do person factors (i.e., frustration discomfort, motivation, and ADHD) increase the predictability of the likelihood of persistence and/or retention among college students receiving an intervention for reading/writing skill deficits?

Research Design and Rationale

I undertook this quantitative research to determine if the type of remediation (i.e., independent variable) can be mediated by students' frustration discomfort/intolerance, type of motivation, and ADHD (i.e., mediating variables), which in turn can affect persistence or attrition (i.e., dependent variables) of community college students from either the course sequence or the college program. Since one participating college had begun using corequisite remediation (i.e., where students receive tutor support while enrolled in standard composition courses despite testing into remedial courses), these students were invited to participate as part of the comparative analysis. The type of motivation for completing courses was considered a mediating variable, due to the fact that those who are highly intrinsically motivated may tend to persist through remedial

courses despite frustration discomfort or intolerance. Figure 1 illustrates the research model for this analysis.

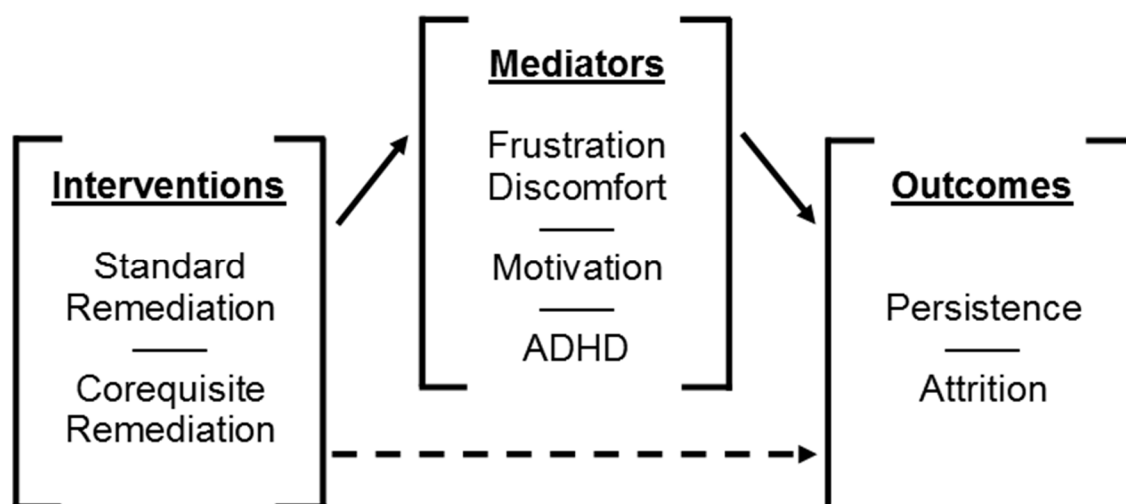


Figure 1. Research design model.

In this research, I used a cross-sectional, self-report survey methodology of adult students 18 years of age or older. Because cross-sectional methodology analyzes data gathered at a particular point in time, it was appropriate for my study because such methodology provides information that allowed me to determine the relationship of variables among enrolled remedial students during a given semester, while allowing me the ability to track persistence to the next semester through enrollment in the next course in the sequence or other additional courses at the respective college. This design is consistent with Wilde (2012), who analyzed frustration discomfort among education majors, and with studies conducted to identify academic motivation in a single academic term, such as Çetin (2015). The between-group method of analysis was additionally

incorporated by Sierpinska, Bobos and Knipping (2007), where interactions of sources of frustration, types of frustration, and types of learners were explored in prerequisite mathematics courses. Additionally, self-report surveys have been commonly used to evaluate frustration discomfort/tolerance (Harrington, 2005; Wilde, 2012), motivation (Koludrović & Ercegovac, 2015; Martin et al., 2014; Vallerand et al., 1992), and ADHD symptomology (Bilkey et al., 2014; Kessler et al., 2005).

Methodology

Population

The population for this analysis included students who tested into below an acceptable level in reading and writing courses through standard placement testing, including ACT, COMPASS, and/or ACCUPLACER (see National Assessment Governing Board, 2011). I recruited participants for this analysis at two, small, Midwestern, 2-year community colleges with a total combined enrollment of approximately 5,000-6,000 students, based on semester, according to the colleges' websites. The websites also show that the student bodies are comprised of a relatively even split of traditional, 18-to-20-year-old students, coming directly from high school, and nontraditional students (i.e., older/ returning students), approximately two-thirds of whom are part-time. All students enrolled in reading and writing remediation at both colleges were invited to participate in this analysis. Each year, approximately 300 students participate in remediation, whether as traditional, standalone courses or those approached as corequisite remediation, which provides tutoring or intensive labs alongside the college-level course. This aspect provided comparative data between the

two types of remediation. A segment of students for each college is comprised of high school students dually enrolled or pursuing early college opportunities, however, this group was not included in the study due to factors related to minors participating in research and obtaining parental consent.

Sampling and Sampling Procedures

With the approval of Walden's IRB and the IRB of both colleges involved, I invited all remedial reading and writing students at the two colleges to participate in self-report surveys. The IRBs and administrators of the participating schools were encouraged to recognize this analysis as an opportunity to gain valuable insight into factors related to persistence or attrition in remedial reading and writing. This helped me recruit sufficient participants for the study and thereby, the opportunity for a greater amount of data for the analysis, as well as giving the participating colleges assistance with future course planning. Once approval was granted, I invited all remedial reading and writing students to participate in the study. No incentives were provided to participating students. Students under the age of 18 were excluded from the participant pool due, as previously stated, to ethical issues related to a protected group (i.e., minor children).

Power. Logistic regression is typically used to find predictive relationships between variables and outcomes (Meyers, Gamst, & Guarino, 2006). Approximately 300 community college students test into reading and writing remediation per year at the participating colleges, varying based upon given semester. I conducted a power analysis using G*Power (see Faul, Erdfelder, Buchner, & Lang, 2009) to determine minimum sample size to meet the following parameters:

Effect size (r):	0.2
α error prob:	0.05
Power ($1-\beta$ prob):	0.80
Minimum sample size:	300 participants

Effect size. Effect size is the size of the association expected to be present in the sample, providing a meaningful difference between the groups in the study and to eliminate a potential chance effect (Meyers et al., 2006). In this case, an effect size of 0.2 is standard and provided me with a minimal benchmark for potential effect. Similar studies have found varying effect sizes; for example, Wilde (2012) found $r^2 = .231$, Field (2013) found $d = 1.02$, and Miller and Sundre (2008) found $d = 0.86$ and 0.63 on separate tests.

Alpha level. To control for possible Type 1 errors, the standard alpha level is $\alpha = .05$, which I used for this study. This is consistent with Wilde's (2012) analysis of frustration discomfort as related to GPA, using Harrington's (2005) Frustration Discomfort Scale; Koludrović and Ercegovac's (2015) analysis of academic motivation in teacher training, using Vallerand et al.'s (1992) Academic Motivation Scale; and the ASRS-V1.1 (Kessler et al., 2005), commonly used by the World Health Organization and many other health professionals (Bilkey et al., 2014).

Procedures for Recruitment, Participation, and Data Collection

Participants for this study were community college students who tested below college-level reading standards and/or below the standard for inclusion in college-level

English courses, potentially placing them in remediation, whether standard or corequisite. I recruited participants through a series of e-mails using the college e-mail system as well as through the standard course dashboard software. Demographic information collected included age (to determine ability to participate); race/ethnicity broken into categories of Black, White, Hispanic, Native American, etc.; and gender, allowing for further analysis of information based upon such demographics.

Informed consent

I provided participants with informed consent through a description of the study; the nature of the research project, explaining the reason for their candidacy as a participant; the risks and benefits associated with the research; and what rights participants have as research subjects, including the right to withdraw from the study at any time. The confidential nature of the study was explained in the study description, as well as how data would be used.

Population and Sample

The survey instruments implemented for this analysis were:

- Frustration Discomfort Scale (Harrington, 2005);
- Adult ADHD Self-Report Scale Symptom Checklist (Kessler et al., 2005);
- and
- Academic Motivation Scale (Vallerand et al., 1992).

Timing of the study. I administered surveys during spring, summer, and fall semesters over the course of a 2-year period. I provided e-mail notifications for participation during the first week of classes, and I encouraged instructors, with the

support of administration officials, to explain the survey as part of the first 2 weeks' activities for class. Additionally, I visited relevant classrooms to explain the research and answer related questions for potential participants. The participant pool received reminders at 2 and 4 weeks into the semester in order to further encourage participation.

Design consistency. My choice of self-report survey methodology is consistent with all aspects of the investigation, which is regularly used to sample various data at a single point in time. This is consistent with collecting data for attitudes, as with frustration discomfort and academic motivation. Studies using the same or similar instruments and methodology include Wilde (2012) and Maurer et al. (2013).

Practitioners, including educators, medical professionals, The National Institute of Health, and the World Health Organization, also use self-report data collection to assess symptoms of ADHD, using Kessler et al.'s (2005) Adult ADHD Self-report Scale Symptom Checklist.

Exiting the study. I informed potential participants of the study procedure prior to beginning the online survey. I made every effort to guarantee anonymity and protect individual participant information, and participants were informed of their right to exit the survey at any time. By selecting "I agree," students provided consent to continue the survey. By selecting "I do not agree," they automatically exited the survey. Because no experimental methods were used, no participant harm was experienced, nor were any questions anticipated to cause mental distress or disturbance. No follow up or debriefing procedures were used due to the one-time, online survey nature of the study. Participants

were able to exit the study by selecting “submit” at the completion of the survey, or by simply leaving the survey at any time during the process.

Instrumentation and Operationalization of Constructs

Frustration discomfort. Frustration discomfort is considered “the inability or unwillingness to persist in an activity due to the unpleasant feelings associated with the task” (Wilde, 2012, p. 3). To assess frustration discomfort and intolerance, I used Harrington’s (2005) Frustration Discomfort Scale (see Appendix A). According to Harrington, the scores for each subscale is tallied; the higher the score for each subscale, the higher the degree of frustration intolerance (Harrington, 2005). These are discrete variables coded numerically for the purpose of analysis. An excerpt from the scale is shown in Figure 2.

RATING SCALE: absent = 1 mild = 2 moderate = 3 strong = 4 very strong = 5					
1. I need the easiest way around a problem; I can’t stand making a hard time of it.					
1	2	3	4	5	

Harrington (2005, p. 2)

Figure 2. Frustration Discomfort Scale excerpt.

This scale consists of four 7-item subscales: a) discomfort intolerance, b) entitlement, c) emotional intolerance, and d) achievement frustration. “This measure comprises 28 items, each rated on a five-point Likert scale with the following anchors: (1) absent, (2) mild, (3) moderate, (4) strong, (5) very strong” (Harrington, 2005, p. 1).

The components of this self-report survey instrument provide data effective for identification of frustration intolerance in general and enable the researcher to identify cognitions potentially related to specific problems, providing avenues for development of techniques that could reduce or eliminate frustration in remedial courses. I obtained permission to use the scale from the developer, Neil Harrington, on 7/27/2015, a copy of which is included in Appendix A, along with the scale.

The scale is comprised of four factors: emotional intolerance, entitlement, discomfort intolerance, and achievement. Other factors were initially included by Harrington; however, they were eliminated based on low reliability through pilot tests. Each component was correlated with the Rosenberg (1965) Self-Esteem Scale, a widely respected existing measure. Using test-retest method, reliability for subscales was determined as emotional intolerance $\alpha = 0.91$, entitlement $\alpha = 0.88$, discomfort intolerance $\alpha = 0.90$, and achievement $\alpha = 0.95$, giving me assurance that the instrument provides reliable data. The instrument has been successfully used with a wide range of populations, such as adults in clinical settings ($N = 254$; Harrington, 2005), youthful populations ($N = 242$; Chih-Hung, Ju-Yu, Cheng-Fang, Chung-Sheng, & Shing-Yaw, 2008), across international populations ($N = 171$; Ozer, Demir, & Harrington, 2012), and, as with the focus of the current analysis, among college students ($N = 105$; Wilde, 2012).

Academic Motivation. Motivation is the process that initiates, guides, and sustains goal-oriented behaviors (Vallerand et al., 1992). To measure academic motivation, I used the Academic Motivation Scale (Vallerand et al., 1992; see Appendix B). Motivation affects individuals' academic achievement, contributes to a self-concept,

self-efficacy, and psychological well-being, and contributes to overall satisfaction with life and experiences. (Koludrović, & Ercegovac, 2015). I included this factor as part of this study due to the fact that motivation intensely affects persistence, as with completion of courses. The Academic Motivation Scale (Vallerand, et al., 1992) is currently and consistently used for this purpose, which influenced its inclusion as part of this study. According to the authors, the scale assesses seven types of constructs: "...intrinsic motivation toward knowledge, accomplishments, and stimulation, as well as external, introjected, and identified regulations, and finally, amotivation. It contains 28 items (4 items per subscale) assessed on a 7-point scale" (p. 2). The items "...are each rated on a 7-point scale ranging from 1 = 'Does not correspond at all' to 7 = 'Corresponds exactly'" (p. 1). The higher the score for the item, the greater the significance of the item to the participant. These are discrete variables for the purpose of this analysis, coded numerically for SPSS. An excerpt from the scale is shown in Figure 3.

Does not correspond at all 1	Corresponds a little 2	Corresponds moderately 3	Corresponds a lot 4	Corresponds a lot 5	Corresponds exactly 6	7
WHY DO YOU GO TO COLLEGE?						
1. Because with only a high-school degree I would not find a high-paying job later on.						
1	2	3	4	5	6	7

Vallerand, et al., 1992, p. 2.

Figure 3. Academic Motivation Scale excerpt.

My inclusion of this self-report survey instrument is necessary to determine participants' incentive for taking classes in order to establish a potential relationship between motives and the potential existence of frustration, followed by the type and degree of frustration. Permission to use the instrument is included via communication with Robert Vallerand, primary author, on March 30, 2016 (see Appendix C).

The scale consists of four subscales comprising a 16-item scale. Using test-retest methodology, Senécal et al. (1995) reported internal reliabilities for its four subscales as: intrinsic, $\alpha = .89$, identified regulation, $\alpha = .61$, external regulation, $\alpha = .80$, and amotivation, $\alpha = .84$. By its design, this scale analyzes motivation in college. The instrument has been successfully utilized in analyses of students at 2-year community colleges ($N = 498$; Senécal et al., 1995), undergraduate education majors ($N = 166$; Çetin, 2015), international students ($N = 566$; Koludrović & Ercegovac, 2015), college students from small versus large high schools ($N = 266$; Horyna & Bonds-Raacke, 2012), as well as online motivational influences of college students ($N = 105$; Aubry, 2013). These studies clearly indicate the reliability and validity of the scale, as well as its ongoing importance and utilization in the research community.

Adult ADHD. The ASRS-V1.1 (Kessler et al., 2005; see Appendix C) was used to measure students' levels of ADHD symptomology. According to the National Institute of Health (2016), "Attention-deficit/hyperactivity disorder is a brain disorder marked by an ongoing pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development" (para. 1). Permission to use the scale is included with scale

documentation (Kessler et al., 2005) via communication with Ronald Kessler, primary author, on March 21, 2016 (see Appendix C).

The ASRS-V1.1, an eighteen-item, self-report questionnaire measures this variable. Each question asks how often a particular symptom has occurred over the past 6 months with responses of never (0), rarely (1), sometimes (2), often (3), and very often (4). Four or more responses of “sometimes,” “often,” and “very often” on Scale A of the instrument, “may be consistent with adult ADHD” (p. 3). Additional information for health care providers is located in Scale B to assist with further diagnosis of the disorder. This instrument is currently and consistently used as a screening device for ADHD among health care providers and agencies, including the U.S. National Institute of Health and the World Health Organization. Participants in my study were further instructed to consult with a healthcare professional for additional questions or concerns. These are also discrete variables for the purpose of analysis, coded numerically for SPSS. An excerpt of the instrument is included in Figure 4.

	<i>Never</i>	<i>Rarely</i>	<i>Sometimes</i>	<i>Often</i>	<i>Very Often</i>
1. How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?	0	1	2	3	4

Kessler et al., 2005, p. 3.

Figure 4. ASRS-V1.1 excerpt.

According to Kessler et al. (2007), the internal reliability of the six question self-report instrument ASRS-V1.1 was in the range of 0.63–0.72 and test-retest reliability in the range of 0.58–0.77 (Pearson correlations) for the various factors. This instrument is widely used by professionals, educators, and practitioners, and is supported by The World Health organization as a screening device for referral for diagnosis. This scale has been used across numerous studies with a wide age range of adults (both male and female), as well as international participants, and in a variety of clinical settings for those under psychiatric and psychological care, among United States and international participants ($N = 170$, Sanchez-Garcia et al., 2015; $N = 880$, Bolton, Hughes, & Kessler, 2008; $N = 1031$ / $N = 3298$; Yeh, Gau, Kessler, & Wu, 2008).

Operationalization

Demographic data. Students provided basic demographic information including gender (M/F string variable), age (discrete variable for screening of individuals under 18 as well as analysis of age as a factor), and race (Asian/Black/Hispanic/Native American, etc., string variables) for simple categorization data. They were also tracked using a classification number to for persistence/attrition, in this case, their college identification numbers, consistent with similar studies. Colleges participating in the analysis were assigned institutional tracking information as dichotomous variables (R/M), coded as string variables for SPSS.

Remedial courses/remediation. Students who test below college-level skills in reading and or writing are either placed in remedial courses or corequisite remediation courses where skills development scaffolding and support is provided throughout a

standard course. According to the National Assessment Governing Board (2011), the standard cut scores for reading comprehension placement into remediation include ACT score of 17 or below, COMPASS score of 73 or below, or ACCUPLACER score of 79 or below. The standards for writing placement into remediation include ACT English score of 21 or below, COMPASS score of 74 or below, or ACCUPLACER score of 87 or below for writing skills on entrance placement tests. This is consistent with current standards in college placement testing (National Assessment Governing Board, 2011).

For my research, remediation is divided into two categories: standard remedial courses and corequisite remediation (dichotomous variables coded as string variables for SPSS). Standard remedial courses are courses which focus specifically on improving students' skills to those levels considered college level. Corequisite remedial courses are college-level courses made up of a mixture of those possessing adequate and those with inadequate skills. Those with inadequate skills are provided assistance throughout the course in order to advance their abilities to that required for the course.

College persistence/success. Persistence or success in college is considered the process of continuing to completion of the degree or program (Bahr, 2012). For this research, students are considered successful/persistent if they complete the remedial/corequisite reading or writing course, and sign up for further courses at their respective college, consistent with Bahr (2012, p. 664). These are also dichotomous variables, coded as string variables for SPSS.

Data Analysis Plan

For this analysis, I used IBM Statistical Package for the Social Sciences-25 (SPSS; IBM, 2017), the standard software for processing data in the social sciences. This provided information related to predictive potential to determine if students who test high in frustration discomfort (Wilde, 2012) and/or ADHD (Bilkey et al, 2014) are likely to persist in remedial or corequisite reading/writing courses. Similarly, the type and degree of motivation can also be used for predictive potential related to persistence in college (Koludrović & Ercegovac, 2015).

Data Cleaning and Screening Procedures

For my analysis, no one under the age of 18 was permitted to participate due to ethical issues concerning a protected group as well as issues related to obtaining parental permission. Individuals indicating they were 17 or younger were removed from the study. Data cleaning continued with removal of duplicate via SPSS. Using descriptive tests, I examined initial data values to see if they fell within the expected range and if data corresponded appropriately to the research questions and fell within the expected range for each question. I encode variables appropriately to type, including 0/1 for nominal (dichotomous) variables (corequisite/standard remediation) and persistence/attrition. For continuous variables, 1-5 correspond to the Frustration Discomfort Scale (Harrington, 2005), 0-4 correspond to the ASRS-V1.1 (Kessler, et al., 2005), and 1-7 correspond to the Academic Motivation Scale (Vallerand, et al, 1992).

Next, I checked data for completion. Incomplete surveys were potentially used if full sections of independent survey components were completed as appropriate. For

example, a fully completed Frustration Discomfort Scale (Harrington, 2005) could still be tracked even if the other instruments were not completed. Additionally, a single subscale of the Frustration Discomfort Scale could still be used even if the full scale was not completed. Incomplete survey information will be coded appropriately using standard SPSS coding for missing data, such as information missing at random, testing fatigue/drop out, not applicable, system error, etc.

Research Questions

As the outcome variables (persistence, retention) for this research were operationalized using discrete, binary classifications, I anticipated using binary logistic regression methods to test the research hypotheses related to each of the research questions. The research questions represented logical steps to evaluate (1) the relationship between type of intervention and outcome probability; (2) the relationship of each of the potentially mediating person variables and outcome probability; and, (3) the overall model which includes all four predictors.

Research Question 1: Does type of intervention for reading/writing skill deficits predict the likelihood of persistence and/or retention among college students receiving the intervention?

H₀₁: Type of intervention for reading/writing skill deficits does not predict the likelihood of persistence/retention (as measured by completion of the course), among college students receiving the intervention.

*H*₁₁: Type of intervention for reading/writing skill deficits significantly predicts the likelihood persistence/retention (as measured by completion of the course), among college students receiving the intervention.

Research Question 2: Does frustration discomfort predict the likelihood of persistence and/or retention among college students receiving an intervention for reading/writing skill deficits?

*H*₀₂: Frustration discomfort (as measured by the Frustration Discomfort Scale; Harrington, 2005) does not predict the likelihood of persistence/retention (as measured by completion of the course) among college students receiving the intervention for reading/writing skill deficits.

*H*₁₂: Frustration discomfort (as measured by the Frustration Discomfort Scale; Harrington, 2005) significantly predicts the likelihood of persistence/retention (as measured by completion of the course), among college students receiving the intervention for reading/writing skill deficits.

Research Question 3: Does student motivation predict the likelihood of persistence and/or retention among college students receiving an intervention for reading/writing skill deficits?

*H*₀₃: Student motivation (as measured by the Academic Motivation Scale; Vallerand et al., 1992) does not predict the likelihood of persistence/retention (as measured by completion of the course), among

college students receiving the intervention for reading/writing skill deficits.

H₁₃: Student motivation (as measured by the Academic Motivation Scale; Vallerand et al., 1992) significantly predicts the likelihood persistence/retention (as measured by completion of the course), among college students receiving the intervention for reading/writing skill deficits.

Research Question 4: Does ADHD predict the likelihood of persistence and/or retention among college students receiving an intervention for reading/writing skill deficits?

H₀₄: ADHD, as measured by the ASRS-V1.1 (Kessler et al., 2005), does not predict the likelihood persistence/retention, as measured by completion of the course, among college students receiving the intervention for reading/writing skill deficits.

H₁₄: ADHD, as measured by the ASRS-V1.1 (Kessler et al., 2005) does not predict the likelihood of persistence/retention, as measured by completion of the course, among college students receiving the intervention for reading/writing skill deficits.

Research Question 5: In addition to type of intervention received, do person factors of frustration discomfort, motivation, and ADHD increase the predictability of the likelihood of persistence and/or retention among college students receiving an intervention for reading/writing skill deficits?

H₀₅: Person factors of frustration discomfort, motivation, and ADHD do not increase the predictability of the likelihood of persistence and/or retention among college students receiving an intervention for reading/writing skill deficits.

H₁₅: Person factors of frustration discomfort, motivation, and ADHD serve as mediators between intervention and outcome. The model, which includes consideration of person factors, will increase the predictability of the likelihood of persistence and/or retention among college students receiving an intervention for reading/writing skill deficits.

Analysis Plan

As previously stated, I anticipated using binary logistic regression via SPSS. Logistic regressions are appropriate for predictive relationships between variables as the dependent variables (persistence and attrition) are binary, ordinal variables (Meyers et al., 2006). Analyses 1-4 evaluated the relationship between each of the variables (type of intervention, frustration discomfort, motivation, and ADHD) and each of the dependent variables. In the final analyses, all variables were entered into the equation to test the model for each outcome variable. I expected that the relationships between type of intervention and outcomes would be mediated by the frustration discomfort, motivation, and ADHD. In particular, students with higher frustration discomfort, lower motivation, and higher ADHD symptomology were expected to show less positive outcomes across types of intervention. However, due to the small sample size, with the permission of my dissertation committee, I analyzed the hypotheses for the study utilizing chi square, *t*

tests, and MANOVA as appropriate for each research question. These tests determine the relationships between the means and variances between expected and observed values, also valid methods for this type of research, as discussed by Gravetter and Wallnau (2009).

Threats to Validity

External Validity

Threats to validity are those factors which could alter the results of the analysis, both within the test and from without, such as with anything that could change responses or behaviors. In the social sciences, this is generally seen as anything that could influence participants to change their responses or behavior due to their participation. For my analysis, minimal information as to the nature of the study was provided in initial information for the survey to avoid the potential of influencing participants to higher expressions of frustration, altered expression of motivation, and/or altered responses to questions about ADHD. For example, participants could become more easily frustrated at completing survey items if primed to display or expect frustration. Furthermore, questions referring to ADHD, such as problems completing tasks, etc., could be influenced by frustration as well as the disinclination to complete the survey instrument.

Internal Validity

The Frustration Discomfort Scale (Harrington, 2005) was validated using test-retest methodology among various populations as well as at various times. Furthermore, it was tested against known scales such as the Rosenberg Self-Esteem Scale (Rosenberg, 1965) to distinguish between self-worth and task frustration. The Academic Motivation

Scale (Vallerand et al., 1992) was also validated using similar test-retest methodology. Finally, the ASRS-V1.1 (Kessler et al., 2005) was twice validated using test-retest methods across a large convenience sample of health plan subscribers, and subsequently by clinical professionals, demonstrating strong reliability with clinical diagnoses.

Ethical Procedures

IRB Approval

Institutional Review Board applications to participating institutions were submitted and agreements are attached (see Appendices F and G). The Walden University IRB approval number is 11-03-16-0157729. One extension to collect additional data was approved.

Treatment of Human Participants

I used every precaution to maintain ethical treatment of all participants. First, I made every effort to design a study that followed all appropriate guidelines and ethical considerations. Next, I provided participating institutions detailed descriptions and considerations of the study. IRB approval from both institutions were granted, and Walden's IRB further examined the study and provided approval, adding additional security and safeguards to protect participants.

Ethical concerns related to recruitment. In order to avoid ethical concerns about social pressure to participate, students were recruited both inside and outside the classroom, with surveys completed at the student's leisure. Students were recruited via e-mail and in remedial or corequisite reading/writing courses. I approached this as an opportunity for students to assist course design and the learning process based on their

learning styles. While I initially considered offering an incentive to participate, I opted to not so as to add a further level of ethical protection. As participants began the survey, they were informed that they could exit the study at any time; continuing with the study was considered informed consent.

As previously described, no one under 18 was included in the study due to ethical concerns about including protected groups (children) in analyses, as well as having to obtain parental permissions. Participants were asked to enter their birthdates in the demographic data in order to screen for age and exclude those under age 18, as well as to gather data related to age in relation to the content of the surveys (frustration discomfort, motivation, and adult ADHD).

Next, I minimally informed participants about the nature of the study in order to avoid priming that could affect the outcome of the questions, as previously described. They were provided an opening statement:

Your participation will provide important information to your college and researchers that will help in improving course content, structure, and implementation, as well as providing improved assistance for students. The information gathered here will remain confidential and secure, and will be used anonymously for data gathering purposes only. While you are free to exit the study at any time, you are strongly encouraged to complete the survey.

Upon completion of the survey, students were provided this further statement:

Thank you for your participation in this important study. Information gathered about student approaches to the learning situation, as well as information that

could potentially affect the learning condition. This information will help us in improving course content, structure, and implementation, as well as providing improved assistance for students. Questions are for data-gathering purposes only and not intended to diagnose, treat, or accommodate any conditions or disorders. If you have questions or concerns, please consult your school's student services office or your health care provider.

Partially incomplete surveys could still be used depending as long as at least one full component of a survey has been completed. For example, independent subscales of Harrington's (2005) Frustration Discomfort Scale (entitlement, gratification, achievement, etc.) could still provide information for the particular subscale; however, this information was used in the overall results. Further, completion of a single survey instrument of the three (Academic Motivation, Vallerand et al., 1992; ASRS-V1.1, Kessler et al., 2005; Frustration Discomfort, Harrington, 2005) could be used for comparative analysis with data in that particular scale. No experiments or interventions were part of the study, so no further ethical concerns were anticipated in that regard.

Treatment of data. All gathered data will be protected to the highest degree of security possible. Participants were tracked for registration in the next course in the sequence or for the next semester as indication of success/persistence. Data were stored on secure servers and password protected. Access to the data is limited to me, as the researcher, and to those assisting with the study, for analytical purposes only. Data are being disseminated as part of this dissertation, as well as potentially to professional journals for publication purposes. No participant is identified in disseminating the

information. Participating colleges are being provided with compiled results as part of the participation agreement, and publication of results will use only terms such as “small 2-year colleges in the Midwest.” Information will be maintained for seven years in compliance with the colleges’ secure data requirement and then destroyed. Course completion information is stored as part of permanent student records; however, when data from my study are removed, any connection to the student will be deleted as well.

I gathered information from students at my places of employment; however, the survey was completed online and was not individually administered, under direct supervision of, or in any way influenced by me as the researcher. I informed study participants of their right to participate or exit the study at any time, and I offered no incentives for completion of surveys so as to additionally ensure ethical participation and data gathering.

Summary

In conclusion, the importance of completing college programs is well-established. Skills necessary for college include most importantly reading and writing skills, yet students who enter college with a deficit in these areas are much less likely to persist (Pruett & Absher, 2015). As stated, I expected to use logistic regression to attempt to predict connections between frustration discomfort, academic motivation, and potential ADHD among students at two small Midwestern community colleges. Due to sample size, and with the permission of my dissertation committee, students were surveyed to determine possible connections between these factors and completion of remedial/corequisite reading and writing courses using more appropriate methodology of

chi square, t tests, and MANOVA as appropriate. My analysis of gathered data is described in detail in Chapter 4.

Chapter 4: Results

Introduction

The purpose of this study was to explore relationships of types of remediation and person factors to persistence or attrition among students who test below college level in the basic skills of reading and writing as they enter college. As previously stated, the general expectation in the United States is that most individuals will pursue and achieve a college degree. Remedial reading and writing students typically fare poorly in this pursuit, with completion rates in these courses 23.3% and 15% lower, respectively, which has led many to question the actual benefits these courses (Pruett & Absher, 2015). Colleges have recently shifted their emphasis to corequisite remediation as a preferred alternative, which has demonstrated improved persistence overall (Adams, 2017). Because the two types of remediation were in use at the community colleges participating in this study, I included this factor as part of this study of persistence factors. Of further interest for the study was frustration discomfort and general academic motivation, both of which may influence persistence. Finally, adult ADHD was of primary concern due to the long-established connection between reading/writing difficulties, and frustration and lack of persistence associated with the disorder (see Bilkey et al., 2014; Oguntinyinbo, 2012; Willcutt & Pennington, 2000).

This chapter begins with a description of data collected for the analysis, including participant demographics. It continues with detailed results of the testing, evaluation of assumptions, and hypotheses testing. The chapter concludes with a transition to Chapter 5.

Data Collection

For this study, I recruited participants were between August 2016 and December 2018, corresponding to semester schedules at the participating colleges. After seven semesters, 104 participants were recruited, whereupon data collection ended. Of these, 72 participants provided sufficient survey responses to be included in the analysis.

I recruited participants were recruited from two, small, Midwestern 2-year community colleges. Each of these institutions granted me permission to recruit participants from students who tested below standard levels for college reading and writing through typical college placement testing, including COMPASS, ACCUPLACER, and/or the ACT and SAT. The participant pool included those who were enrolled in standard or corequisite remediation for reading and writing. Recruitment occurred initially via e-mail invitations at the start of each semester as well as visits to these classrooms to explain the study and e-mail reminders sent later in the semester. During recruitment, I informed potential participants as to the nature of the study and described it as an analysis of individual learning styles. Terms such as *frustration*, *motivation*, *impatience*, *intolerance*, *attention deficit*, etc., were intentionally not used so as to avoid influencing survey responses and the outcomes of the analysis.

As I previously mentioned, surveys were offered online (through freeonlinesurveys.com) provided via an e-mail link and were completed by students on their own time and at their own discretion. In the survey, participants were given a brief description of the study and the option to continue or exit the survey, making participation purely voluntary. No incentives were provided to recruit participants,

avoiding the potential of undue influence to participate. I ensured minimal risk to participants by protecting privacy and confidentiality at each step of the research. Only each college's institutional research department, and me, as the researcher, had knowledge of and use of collected information so as to be able to connect survey information to student persistence data, a method approved by each college's IRB as well as that of Walden University. This is considered standard for research that must connect student information to course completion and persistence data. The online survey service used for this study further protected volunteers' privacy by not identifying individual devices used in the completion of surveys.

Participant Demographics

I collected basic demographic information from each participant via the survey. Ages of participants ranged from 18-57 years of age, with age data gathered in order to exclude children from the analysis; the mean age was 25.5 years old. Females comprised 61.1% of participants and males, 38.9%. The two community colleges involved in the analysis were predominantly White, with this characteristic represented among participants. Among them, 5.6% identified as African American/Black, 2.8% as Asian, 4.2% as White Hispanic, 1.4% as non-White Hispanic, and the remaining 86.1% of participants identified as White. As I previously stated, 104 participants qualified for the analysis; however, 32 were excluded due to not providing sufficiently completed survey information to be included in the study, leaving 72 participants (approximately 70% of the total qualified participants) for the analysis. While 300 participants were identified to test the hypotheses using binary logistic regression, with the approval of my dissertation

committee, I determined that analysis could be completed using alternative methodology due to the small sample size.

Table 1

Participant Demographics

	Frequency	Percent
Age		
18–19	28	38.9
20–29	29	40.5
30–39	8	11.2
40–49	2	2.8
50+	5	7.0
Sex		
Female	44	61.1
Male	28	38.9
Race		
African American/Black	4	5.6
Asian	2	2.8
Hispanic (White Hispanic)	3	4.2
Hispanic (non–White)	1	1.4
White (non–Hispanic)	62	86.1
ADHD diagnosis		
Yes	10	13.9
No	58	80.6
Don’t know	4	5.6

Note. $N = 72$

Results

To collect participant data, I used an online survey provider (i.e., freeonlinesurveys.com). Numerical data collected from the site were then transferred to an Excel spreadsheet and organized. I then loaded the data file into an SPSS Version 25 data file, where categorical information was encoded, variables were labeled, and data cleaned and explored for missing values.

Missing Data

As previously stated, 32 surveys (over 32% of possible responses) had significant missing information and were eliminated from the analysis. For those participants with occasional missing data, I performed Little's Missing Completely at Random (Little's MCAR) analysis and found that the missing data were within acceptable parameters ($p > .05$). Using SPSS, missing values were then imputed using mean values, consistent with guidelines suggested by Meyers et al. (2006).

Assessments of Internal Reliability of Research Measure

All scales used in this study were selected because of previous reports of acceptable internal reliabilities using Cronbach's alpha ($\geq .70$) for the general population. Before computing the scale scores for research variables used in this study, I conducted an analysis of internal reliability for the sample to ensure that reliability was within acceptable parameters. Overall, each of the three measures' subscales used in this study demonstrated acceptable to high internal reliability. The internal reliability results are summarized in Table 2.

Table 2

Internal Reliabilities for Research Scales

Scale tested	Cronbach's alpha	Number of items
Frustration Discomfort Scale	.922	28
Discomfort Intolerance (FD_DI)	.815	7
Entitlement (FD_EN)	.815	7
Emotional Intolerance (FD_EI)	.815	7
Achievement (FD_AC)	.790	7
Academic Motivation Scale	.915	28
Intrinsic Motivation – to Know (AM_IN_KN)	.788	4
Intrinsic Motivation – toward Accomplishment (AM_IN_AC)	.858	4
Intrinsic Motivation – to Experience Stimulation (AM_IN_ES)	.848	4
Extrinsic Motivation – Identified (AM_EX_ID)	.750	4
Extrinsic Motivation – Introjected (AM_EX_IN)	.885	4
Extrinsic Motivation – External Regulation (AM_EX_ER)	.842	4
Amotivation (AM_AM_OV)	.778	4
Adult Self-Report ADHD Questionnaire	.868	18
ADHD-A	.768	6
ADHD-B	.868	12

Note. $N = 72$

Evaluating Assumptions for Analysis

In this study, I examined type of remediation and person factors as related to persistence among remedial students in community colleges. There were two types of remediation to compare: traditional remediation, where students take a full course preceding entrance into college-level courses, and corequisite remediation, where students are enrolled in lab-type support sections concurrently with college-level courses. Person factor variables were frustration discomfort, academic motivation, and self-reported indicators of adult ADHD. I anticipated using binary logistic regressions, with persistence group as the dependent variable, to test Research Questions 2–4; however, due to the smaller than planned sample sizes, binary logistic regressions were not possible. Instead, and with the permission of my dissertation committee, *t* tests were employed to compare remediation groups on means for person variable scores. The research questions/hypotheses were revised to reflect these changes in analyses for Research Questions 2–4. I used 2 (persistence) X 2 (remediation) MANOVA, with person variables as the dependent measures, used to evaluate Research Question 5.

The mean ratings were computed for each of the subscales on all four measures. I used the SPSS “explore” function to evaluate the distributions of scale scores for outliers and normality by examining computed values for skewness and kurtosis as well as histograms, q-q plots, and box plots.

My examination of box plots indicated outliers for two subscales. First, the Frustration Discomfort Scale subscale, Amotivation, contained several outliers which

will be described below. Furthermore, the ASRS-V1.1 Subscale B scores as a continuous measure indicated one outlier (< 1%) above the mean, which was corrected using the maximum normed residual test (see Barnett & Lewis, 1998) whereby the value of the outlier value is changed to that of the next observed value that is closer to the mean and not an outlier. Table 3 presents the descriptive statistics for all of the scale scores.

Table 3

Descriptive Statistics for Research Variables

Research variable	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Frustration Discomfort Scale				
Discomfort intolerance	2.06	.77	.55	-.39
Entitlement	2.49	.88	.33	-.61
Emotional intolerance	2.41	.87	.24	-.97
Achievement	3.07	.87	-.16	-.23
Academic Motivation Scale				
Intrinsic motivation – to know	4.95	1.30	-.35	-.65
Intrinsic motivation –				
toward accomplishment	4.18	1.50	.04	-.28
Intrinsic motivation –				
to experience stimulation	3.20	1.52	.43	-.44
Extrinsic motivation – identified	5.73	1.12	-.75	-.15
Extrinsic motivation – introjected	4.89	1.64	-.55	-.73

(table continues)

Research variable	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Extrinsic motivation –				
external regulation	5.16	1.55	-.82	.16
Amotivation	1.56	1.01	2.41	6.63
Adult ADHD Self-Report Scale Symptom Checklist				
Subscale A	2.71	.80	-.02	-.69
Subscale B – Adjusted	2.57	.73	.06	-.21

Note. *N* = 72

Assumption of Normality

Before conducting parametric statistical tests, it was necessary to evaluate the characteristics of the continuous variables that would be used as the dependent variables for the between-group analyses. As may be seen in Table 3, skewness and kurtosis for the Academic Motivation subscale, Amotivation, were initial indicators of problems with normality for this subscale (see Appendix A). Inspection of the histogram supported this observation. Because of this, I converted the subscale to a discrete variable using a median split to classify students as either low or high amotivation. After examination of other distributions, all other subscales were assumed to approximate normality sufficiently to allow for use of parametric statistics.

Assumption of Homogeneity of Variance

The Levene's test was used to evaluate homogeneity of variance for all parametric tests. I had planned to use the related statistical t test outcome where homogeneity could not be assumed. This was necessary only for one t test: Amotivation.

Hypotheses Testing

As previously discussed, I anticipated using binary logistic regression for my analyses. However, due to the small sample size, this analysis was not possible. With approval from my dissertation committee, I used chi square analysis where both variables were discrete, and t tests and a MANOVA where the dependent variables were continuous.

This meant that a chi square test was used for Research Question 1, to evaluate the association between type of remediation and persistence, and for the association between amotivation and persistence. For Research Questions 2-4, I used t tests to compare groups of students who did or did not show persistence, and a MANOVA was employed to evaluate between-group differences on persistence with consideration both the situational variable (type of remediation) as a second independent variable, and all person variables (except amotivation) as dependent variables. My research questions have been reworded to reflect change in the types of analyses.

Research Question 1

Does type of intervention for reading/writing skill deficits predict the likelihood of persistence and/or retention among college students receiving the intervention?

Table 4 presents a 2 X 2 crosstabulation of the frequency of students falling into each persistence classification (no, yes) with frequency of students in each of the remediation groups. Results suggested a trend, but not a statistically significant difference in persistence for the two remediation groups, $\chi^2(1, N = 72) = 3.707, p < .054$. $\Phi = .227$. Thus, the null hypothesis was not rejected.

Table 4

Frequency of Persistence Among Students in the Two Remediation Groups

Remediation group / persistence	Did not persist	Persisted
Standard remediation	12	35
Corequisite remediation	12	13

Note. $N = 72$

Research Question 2

Do persisters and nonpersisters among college students receiving an intervention for reading/writing skill deficits differ in frustration discomfort, as measured by the Frustration Discomfort Scale (Harrington, 2005)?

Means, standard deviations, and results of the t tests for the subscales for frustration discomfort are summarized in Table 5. As may be seen, there were no significant differences between persisters and nonpersisters on frustration discomfort. The null hypothesis was not rejected.

Table 5

Differences Between Persisters and Nonpersisters on Frustration Discomfort

Subscale	<u>Persistence group</u>		<i>t</i> value	<i>df</i>	Sig.
	Yes	No			
Discomfort Intolerance	1.94 (.73) ^a	2.30 (.19)	- .191	70	<i>n.s.</i>
Entitlement	2.45 (.85)	2.58 (.95)	- .57	70	<i>n.s.</i>
Emotional Intolerance	2.39 (.87)	2.44 (.90)	-.26	70	<i>n.s.</i>
Achievement	3.15 (.88)	2.90 (.89)	1.13	70	<i>n.s.</i>

Note. ^a Mean (SD), *N* = 72; *p* < .05 (2-tailed)

Research Question 3

Do persisters and nonpersisters among college students receiving an intervention for reading/writing skills deficits differ in motivation, as measured by the Academic Motivation Scale (Vallerand et al., 1992)?

Means, standard deviations, and results of the *t* tests for the subscales for academic motivation are summarized in Table 6. Table 7 presents the chi square results for testing the association between persistence group and amotivation level. As may be seen, there were no significant differences between persisters and nonpersisters on subscales for academic motivation. The null hypothesis was not rejected.

Table 6

Differences Between Persisters and Nonpersisters on Academic Motivation

Subscale	<u>Persistence group</u>		<i>t</i> value	<i>df</i>	Sig.
	Yes	No			
Intrinsic - to Know	5.11 (1.32) ^a	4.65 (1.26)	1.42	70	<i>n.s.</i>
Intrinsic – toward Accomplishment	4.40 (1.62)	3.75 (1.14)	1.77	70	<i>n.s.</i>
Intrinsic – to Experience Stimulation	3.34 (1.60)	2.89 (1.34)	-1.2	70	<i>n.s.</i>
Extrinsic – External Regulation	5.12 (1.51)	5.24 (1.17)	-.306	70	<i>n.s.</i>
Extrinsic – Identified	5.62 (1.23)	5.96 (.86)	-1.23	70	<i>n.s.</i>
Extrinsic – Introjected	5.07 (1.62)	4.54 (1.64)	1.30	70	<i>n.s.</i>

Note. ^a Mean (SD), *N* = 72; *p* < .05 (2-tailed)

As previously stated, due to skew and kurtosis factors, the Amotivation subscale was converted to discrete variables with designated categories of low and high motivation.

Table 7 presents a 2 X 2 crosstabulation of the frequency of persistence for students in each of the Amotivation groups. Results suggested no statistically significant difference in persistence for the two amotivation groups, $\chi^2(1, N = 72) = 1.54, p < .695$. *Phi* = -.046. Thus, the null hypothesis was not rejected.

Table 7

Frequency of Persistence Among Students in the Two Remediation Groups

Amotivation group /		
persistence	Did not persist	Persisted
Low amotivation	19	36
High amotivation	5	12

Notes. $N = 72$, $\chi^2(1, N = 72) = 1.54, p < .695$. $\Phi = -.046$

Research Question 4

Do persisters and nonpersisters among college students receiving an intervention for reading/writing skill deficits differ in self-reported adult ADHD as measured by the ASRS-V1.1 (Kessler et al., 2005)?

Means, standard deviations, and results of the t tests for the subscales for self-reported Adult ADHD symptoms are summarized in Table 8. As may be seen, there was a statistically significant difference between persisters and nonpersisters on overall scores for ADHD, $t(70) = -2.76, p = .007$, and for each of the subscales: ADHD-A, $t(70) = -3.34, p = .001$, ADHD-B, $t(70) = -2.18, p = .033$. Therefore, the null hypothesis was rejected.

Table 8

Differences Between Persisters and Nonpersisters on Adult ADHD Self-Report Symptoms

Subscale	<u>Persistence group</u>		<i>t</i> value	<i>df</i>	Sig.
	Yes	No			
ADHD-A	2.50 (.74) ^a	3.13 (.76)	-3.34	70	.001
ADHD-B	2.44 (.76)	2.82 (.60)	-2.18	70	.033
ADHD-Full Scale	2.46 (.72)	2.92 (.59)	-2.76	70	.007

Note. ^a Mean (SD), *N* = 72; *p* < .05 (2-tailed)

Research Question 5

Do persisters and nonpersisters in the two remediation programs differ on person variables?

Group means on overall person variable measures are summarized in Table 9. A 2 (persistence group) X 2 (type of remediation program) MANOVA was conducted on overall scores for the three person variables, frustration discomfort, academic motivation, and self-reported adult ADHD symptoms. Overall scores, rather than subscales scores, were evaluated due to challenges for statistical power with the sample sizes.

Results of the Box's M test indicated the observed covariance matrices of the dependent variables were equal across groups. Group means and results of the MANOVA are summarized in Tables 9 and 10. Using Pillai's trace (see Table 9), there was no relationship between type of remediation and person factors, nor interaction

between type of remediation and persistence group. On the other hand, there was a statistically significant relationship between persistence and person factors, Pillai's trace = .115, $F(3, 72) = 2.87$, $p < .05$, partial $\eta^2 = .115$, but this outcome is unreliable due to the low effect size and power of the analysis.

Table 9

Mean Scores for Person Variables Among Persisters and Nonpersisters in the Two Remediation Groups

Persistence group	<u>Remediation group</u>	
	Standard	Corequisite
Frustration Discomfort		
Persister	2.49 (.67, 35) ^a	2.46 (.69, 13)
Nonpersister	2.22 (.67, 12)	2.89 (.74, 12)
Academic Motivation		
Persister	4.27 (1.07, 35)	4.44 (1.02, 13)
Nonpersister	3.81 (.63, 12)	4.35 (.64, 12)
Self-Report Adult ADHD		
Persister	2.44 (.73, 35)	2.53 (.59, 13)
Nonpersister	3.06 (.65, 12)	2.89 (.60, 12)

Note. ^a Mean (SD), $N = 72$; $p < .05$ (2-tailed)

Table 10

Results of 2 X 2 MANOVA for Overall Scores on the Person Variables

Factor	Pillai's trace	<i>F</i>	<i>df1</i>	<i>df2</i>	Sig.	η_p^2
Persistence group	.12	1.03	3	66	.043	.66
Type of remediation	.07	2.87	3	66	.214	.39
Type of remediation X persistence group	.06	1.42	3	66	.244	.36

Notes. ^a Mean (SD), *N* = 72; *p* < .05 (2-tailed)

Summary

Overall, the results of this analysis indicated that the type of remediation was not related to students' persistence. Further, self-reported adult ADHD was the only person factor that was significantly related to persistence among this group of participants. Frustration discomfort and academic motivation did not appear to be relevant to persistence in college among these participants. A discussion of results and findings follow in Chapter 5, along with a discussion of limitations of the study, how these results relate to current research, and implications for future research.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose for this quantitative study was to determine if 2-year college student persistence in remedial reading and writing courses is based on person factors of frustration discomfort, academic motivation, and adult ADHD and/or on type of remediation (i. e., standard remedial courses or corequisite remediation). In this chapter, I discuss the findings as related to the literature on persistence in college and implications for use by education professionals to assist in college persistence among adults in 2-year college programs. The chapter concludes with a discussion on the limitations of the study, implications for further research, and a brief summary. Of the factors studied, I found that self-reported ADHD symptomology was the only factor that significantly predicted persistence in reading and writing remediation.

Interpretation of the Findings

Two-year community colleges typically admit significant numbers of students requiring remedial support in reading, writing, and math (Pruett & Absher, 2015). Traditional, stand-alone remediation courses have been the customary method for building skills necessary to proceed into college-level courses; however, reading and writing remedial courses have been associated with strikingly high attrition rates, particularly if students are required to repeat the course over successive terms prior to being able to begin foundational or majors-related courses (Complete College America, 2012). Searching for solutions, educators began to institute corequisite remedial support sections, taken concurrently with foundational courses, as a strategy to encourage student

progression and avoid attrition, demonstrating striking success reported in some instances (Adams, 2017).

Type of Remediation

Adams (2017) discussed persistence improvement upon adoption of corequisite remediation. Unlike this report, I found that the persistence rate was not significantly different between those who persisted ($n = 48$) and those who did not ($n = 24$). The limitations of my results due to small sample size will be discussed in subsequent sections of this chapter.

Frustration Discomfort and Intolerance

Additionally, I investigated frustration discomfort as a potential persistence factor, particularly because those who experience high frustration discomfort and intolerance have been demonstrated to be less likely to persist in activities when need frustration fails to balance with need satisfaction (Vansteenkiste & Ryan, 2013); therefore, students who become frustrated with perceived delays in their educational programs through the remedial process may be less likely to persist, leading to attrition from college. Again, this factor did not achieve statistical significance. The findings will be discussed in greater depth in the subsequent section on the limitations of the study.

Academic Motivation

The third factor that was examined as a potential factor influencing attrition was that of academic motivation. Motivation is decidedly tied to performance (i.e., GPA) and persistence in the educational process (Wheless et al., 2011). Academic performance can be delayed or limited when students base their educational pursuits on motivations that

are less enduring, such as extrinsic needs for immediate gratification; extrinsic motivation promoted by significant influencers such as parents or society in general, or by simply lacking motivation for college. However, for the participants in my study, motivation was not related to persistence.

ADHD

The final and central aspect of this study was self-reported adult ADHD symptoms, a disability that can result in lack of emotional self-regulation, increased levels of frustration, and decreased levels of perseverance in pursuits (see Burns & Martin, 2014). Of the elements investigated in this study, this is the only person factor that demonstrated significance as a predictor of persistence in college. Therefore, my findings for this factor were consistent with previous theory and research into ADHD as a risk factor for academic performance and achievement (see Bilkey et al., 2014 and Oguntoyinbo, 2012). This one finding highlights the importance of identifying and offering remedial support that may be even more tailored to individuals with ADHD symptoms. Only 1 in 10 individuals who are suffering with ADHD are actually diagnosed (Bilkey et al., 2014), while less than half of those diagnosed receive no accommodations for the disability (Oguntoyinbo, 2012).

Limitations of the Study

After conducting this analysis, I identified several factors that limit generalizability. First and foremost was the limited response rate and resulting small sample size. Over the course of seven semesters, with a participant pool of approximately 1,000 subjects recruited, only 104 chose to begin the study. Of these, after reviewing the

survey information provided, 32 participants failed to provide sufficient information to be included in the analyses. According to the chief strategy officer at one of the colleges under study, low participation rates may not be atypical for survey response at these community colleges. Low response rates have been related to disinterest in completing the survey; limited time for participation due to life demands; or, interestingly, symptoms of ADHD, which proved a significant factor in persistence among students who actually did complete the survey, warranting potential further study.

The small sample size further limited power of the analysis such that the originally planned analyses (i.e., binary logistical regressions) could not be performed. Instead I used chi square, *t* tests, and MANOVA as replacements to explore relationships among the mean variables, but these were not directly reflective of the prediction model that was conceptualized for the originally framed research questions.

I also cannot be sure of how representative my sample was of students who participated in these two remediation groups. For example, I am uncertain if my findings from those who did complete the survey are generalizable to those who did not participate at all by even looking at the survey, or those who looked at the survey but did not continue, or those who provided limited numbers of responses without completing the survey. Furthermore, some of the person factors that are known to limit academic motivation and performance (i.e., frustration, motivation, and ADHD) may also impede initial willingness to participate in and/or complete this kind of survey. These potentially confounding factors warrant further exploration and consideration of methods of research in this area.

Recommendations

My experience during this study has highlighted the challenges to research in this area with students who may be less likely to participate in written surveys. My first recommendation for ongoing research is to consider some type of incentive for participation. After the first term when I noted low response rates, I considered adding an incentive, such as a \$5 gift card, for participation. However, this was not viable, and because the first contingent were not offered incentives, I felt it inappropriate to do so. I also believe that if there had been minimal course credit (i.e., extra credit) allotted for participation, this may have improved participation.

The community colleges with whom I worked as community partners were helpful in disseminating recruitment materials and providing information on the students' persistence activities. In the future, perhaps researchers and educators can join forces to assess needs and risk factors, such as self-reported ADHD, among students who enter into remediation activities. Then, educators, working with institutional offices of disability support services may be able to develop and evaluate additional ways to offer more personalized support for such needs during the remediation experience.

Implications for Positive Social Change

In this study, I analyzed the type of remediation along with person factors that could relate to persistence or attrition among 2-year community college remedial reading and writing students. Contrary to previous literature demonstrating dramatically higher rates of persistence in relation to type of remediation, I did not find this to be true.

However, due to the small sample size and reduced statistical power in my study, previous findings could potentially be further verified with a larger group of participants.

A significant factor for this analysis was that self-reported adult ADHD symptoms, a disability recognized by the APA (2013), significantly predicted persistence in remedial reading and writing courses. Therefore, positive a social change implication of this study would be to encourage early testing for this factor as a disability protected under IDEA (2006). If students are at higher risk of attrition due to a protected disability, it is unconscionable that they should be denied the benefits of post-secondary education because of a disability. Pending further investigation utilizing a larger sample size, this is a factor that can and should be addressed more closely across all institutions of higher learning.

Most, if not all, institutions of higher learning have offices of disability services that are designed to support such students. Early diagnosis of adult ADHD using the 18-question survey used in this analysis, or the six-question abbreviated version (i.e., Adult Self-Report Scale – V1.1 Screener; Kessler, et al., 2005) could easily be encouraged and implemented, providing important indications of how to best support and accommodate these students. Additionally, active monitoring of student progress in remediation is further indicated, which will offer insight into at what point progress may begin to decelerate, giving students the opportunity to utilize indicated accommodations, such as additional support through tutoring, etc. Proactive (i.e., intrusive) advising models would be appropriate and highly recommended for these at-risk students so that institutions can remain abreast of progress and threats to persistence. Combining these recommendations

with supportive, caring campus communities could help provide students with the opportunity for higher rates of persistence and success in their post-secondary academic pursuits. While not all factors involved in educational persistence/attrition decisions can be accounted for, early diagnosis of adult ADHD can relatively quickly be determined, providing potentially better outcome opportunities for all students and addressing a disadvantage that students with this disability face. Again, further analysis using a larger sample size is recommended to determine if subsequent research supports the findings of this study.

Conclusion

Contrary to previous findings regarding persistence/attrition in remedial reading/writing courses, the type of remediation did not significantly impact participants' persistence in college in this study. Adams (2017) reported that students' persistence dramatically improved with the establishment of corequisite remediation, while participants in my study did not demonstrate significantly higher levels of persistence due to type of remediation. Further analysis with a larger participant group is highly recommended for this factor.

However, self-reported adult ADHD emerged as the single most important predictor of persistence among the students who participated in my study. This outcome echoes the voices of others who have tried to advocate for specialized support of these students. For example, Willcutt and Pennington (2000) noted that students with ADHD were more likely to present with reading disabilities (and relatedly, writing difficulties), a related predictor of lower persistence. Mamiseishvili and Koch (2011) stated that nearly

one-fourth of students with disabilities (adult ADHD among these) did not return after their first year in college, while over half did not return after their second year. These statistics potentially parallel attrition rates for remedial students, which leads to questions regarding whether remediation type is truly the issue with attrition or if it is more basically the presence of adult ADHD. Alao (2015) reported a lack of studies that have analyzed the implications of adult ADHD among college students, which suggests further analysis, and minimally, increased recommendations for testing and utilization of support provisions for these at-risk students as part of IDEA (2006). However limited in scope, the findings from this study underscore the need for diagnosis and appropriate support for these students.

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Appendix A: Histogram of Amotivation Subscale

